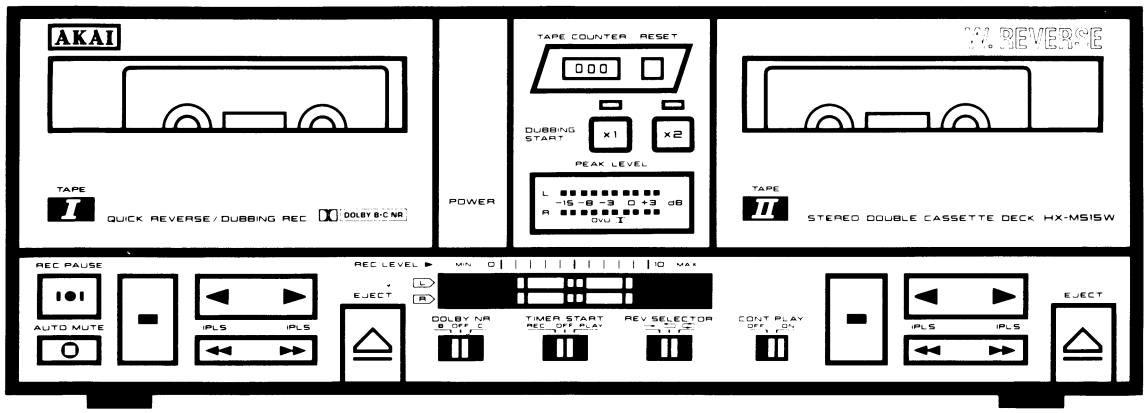
# AKAI SERVICE MANUAL




## STEREO DOUBLE CASSETTE DECK

## MODEL HX-M515W

## SPECIFICATIONS

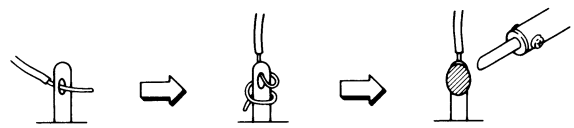
| | |
|---|---|
| Motors | Electronically speed controlled DC motor for capstan drive × 2<br>DC motor for reel drive × 2 |
| Heads | HD head for recording and playback × 2<br>Erase head × 1 |
| Wow & flutter | 0.07% WRMS (JIS), 0.12% (DIN) |
| Distortion | 0.7% (Metal) |
| Frequency response (-20dB recording) | Normal: 25Hz to 15,000Hz ± 3dB<br>$CrO_2$: 25Hz to 16,000Hz ± 3dB<br>Metal: 25Hz to 17,000Hz ± 3dB |
| S/N | 58dB (Metal)<br>(Measured via tape with peak recording level)<br>Dolby C type NR ON: Improves up to 15 dB at 500 Hz, 20 dB at 1kHz to 10 kHz<br>Dolby B type NR ON: Improves up to 5dB at 1kHz, 10dB above 5kHz |
| Input sensitivity | 70mV |
| Impedance | 47kohms |
| Output sensitivity | 388mV |
| Impedance | 2kohms |
| Power requirements | 120V, 60Hz for USA & Canada<br>220V, 50Hz for Europe except UK<br>240V, 50Hz for UK & Australia<br>110V/120V/220V/240V, 50Hz/60Hz convertible for other countries |
| Dimensions | 350 (W) × 123 (H) × 270 (D) mm (13.8 × 4.8 × 10.6 inches) |
| Weight | 5.3kg (11.7lbs) |

* For improvement purposes, specifications and design are subject to change without notice.
* Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

# SAFETY INSTRUCTIONS

## PRECAUTIONS DURING SERVICING

1. Parts identified by the ⚠ symbol parts are critical for safety. Replace only with parts number specified.
2. In addition to safety other parts and assemblies are specified for conformance with such regulations asthose applying to spurious rediation.
   These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing.
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

## SAFETY CHECK AFTER SERVICING

Confirm the specified insulation resistance between power cord plug prongs and externally exposed parts of the set is greater than 10 Mohms, but for equipment with external antenna terminals (tuner, receiver, etc.) and is intended for [C] or [A], specified insulation resistance should be headphone jacks. line-in-out jacks etc.) more than 2.2 Mohms (groud terminals, microphone jacks, headphone jacks, line-in-out jacks etc.)

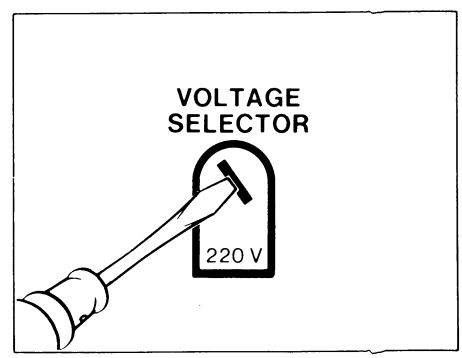
# USEFUL INFORMATIONS

## PRINCIPAL DESTINATION AND SYMBOLS

| Symbols | Principal Distinations |
|---|---|
| [A] | America |
| [B] | United Kingdam |
| [C] | Canada |
| [E] | Europe |
| [J] | Japan |
| [S] | Australia |
| [V] | West Germany |
| [U] | Other countries |

## VOLTAGE CONVERSION ([U] model only)

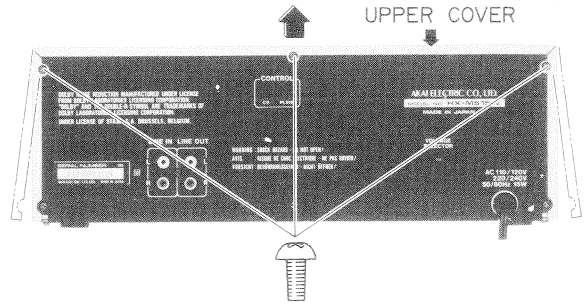
Before connecting the power cord, turn the VOLTAGE SELECTOR located on the Rear panel with a screwdriver untill the correct voltage is indicated.



# I. DISMANTLING OF UNIT

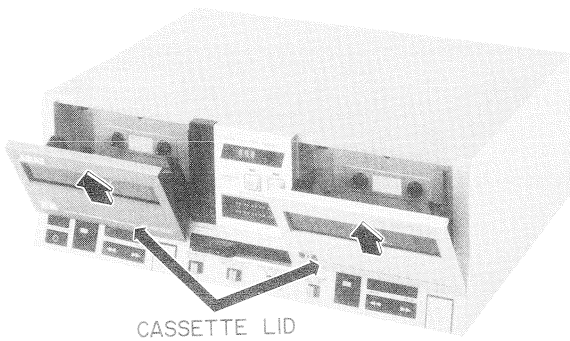
In case of troble, etc. necessitating dismantling, please dismantle in the order shown in the photographs. Reassemble in reverse order.

3

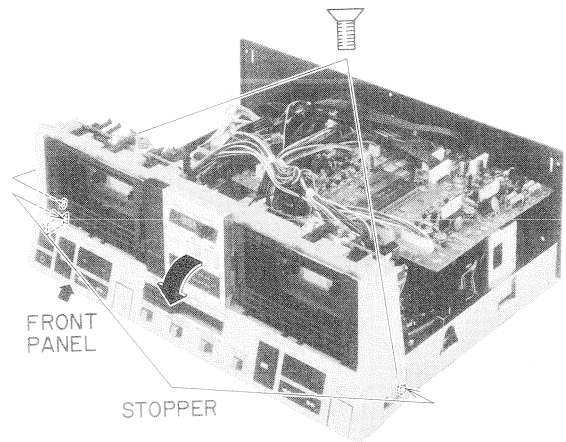



remove the three screws

1 REMOVAL CASSETTE LIDS

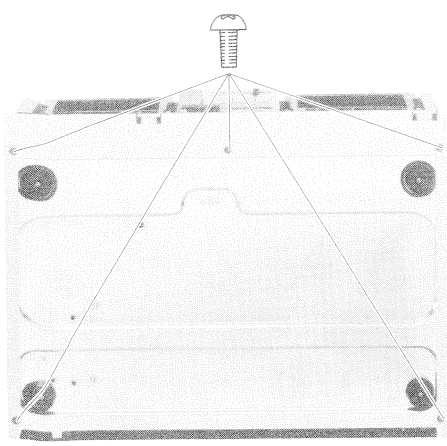



4 REMOVAL FRONT PANEL



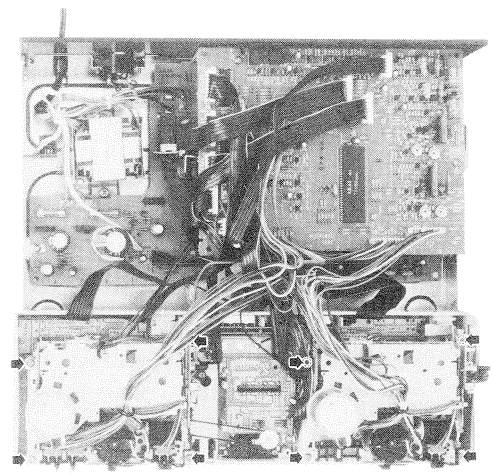

remove the two screws and unfasten the two stoppers

2 REMOVAL UPPER COVER



remove the five screws

5



when removing MECHA BLK, remove the screws with indicated → (arrow) mark.

# II. CONTROLS

POWER button.

Commutateur d'alimentation (POWER).

TAPE COUNTER and COUNTER RESET button for TAPE I only.

Compteur de bande (TAPE COUNTER) et touche de réinitialisation (RESET), uniquement pour la bande 1 (TAPE I).

DUBBING indicators.

Indicateurs de copie (DUBBING).

Cassette holders.

Compartiments de cassette.

PEAK LEVEL METER. Shows the recording and playback Peak Levels (L: Left, R: Right).

Indicateur du niveau de crête (PEAK LEVEL). Indique les niveaux de crête de l'enregistrement et de la reproduction (L: gauche, R: droite).

DUBBING START ×1, ×2 buttons. For normal and high speed dubbing.

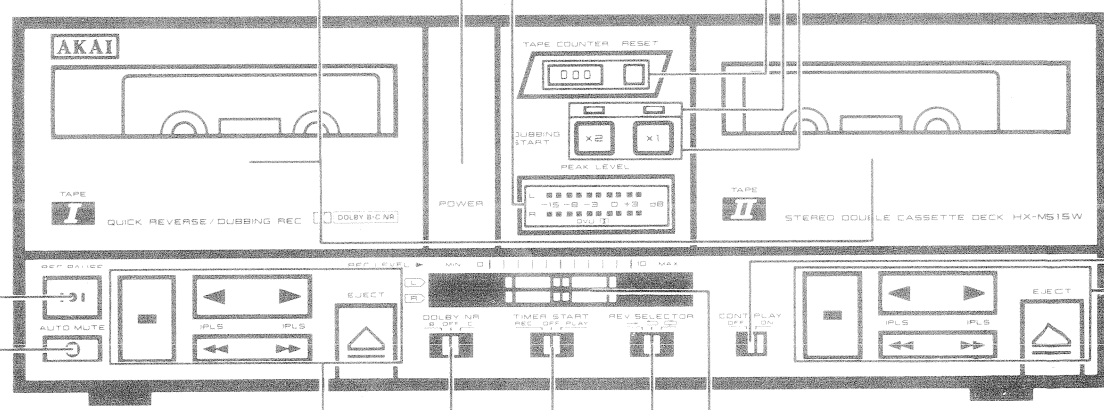
Touche de démarrage de copie (DUBBING START ×1, ×2). Pour la copie à vitesse normale et à vitesse rapide.

REC PAUSE button and indicator.

Touche et indicateur d'enregistrement/pause (REC PAUSE).

CONT PLAY switch. To continuously play back two cassette tapes.

Commutateur de lecture continue (CONT PLAY). Pour reproduire de façon continue deux bandes cassette.




AUTO MUTE button. To instantly create 4 seconds of blank tape.

Touche de sourdine automatique (AUTO MUTE). Pour créer instantanément 4 secondes de bande vierge.

Tape Transport Buttons. (PLAY, STOP, F.FWD, RWD, IPLS, EJECT.)

Touches de transport de la bande (reproduction (◀ ou ▶), arrêt (■), avance rapide/retour (◀◀ ou ▶▶), IPLS, éjection (EJECT ▮◉▮)).

**REV SELECTOR**. To set the tape reverse mode during recording and playback.

Sélecteur d'inversion (REV SELECTOR). Pour régler le mode d'inversion de la bande durant l'enregistrement et la reproduction.

Tape Transport Buttons. (PLAY, STOP, F.FWD, RWD, IPLS, EJECT.)

Touches de transport de la bande (reproduction (◀ ou ▶), arrêt (■), avance rapide/retour (◀◀ ou ▶▶), IPLS, éjection (EJECT ▮◉▮)).

Dolby NR selector.

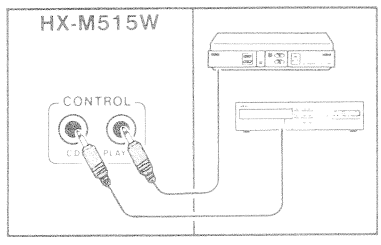
Sélecteur Dolby NR.

**TIMER START** selector.

Commutateur de départ minuterie (TIMER START).

Left and Right REC LEVEL control. To set the recording input levels.

Commande de niveau d'enregistrement gauche et droit (REC LEVEL). Pour régler les niveaux d'entrée de l'enregistrement.




CONTROL JACKS on the Rear Parel for the CD-M515 and AP-M313.

# III. PRINCIPAL PARTS LOCATION

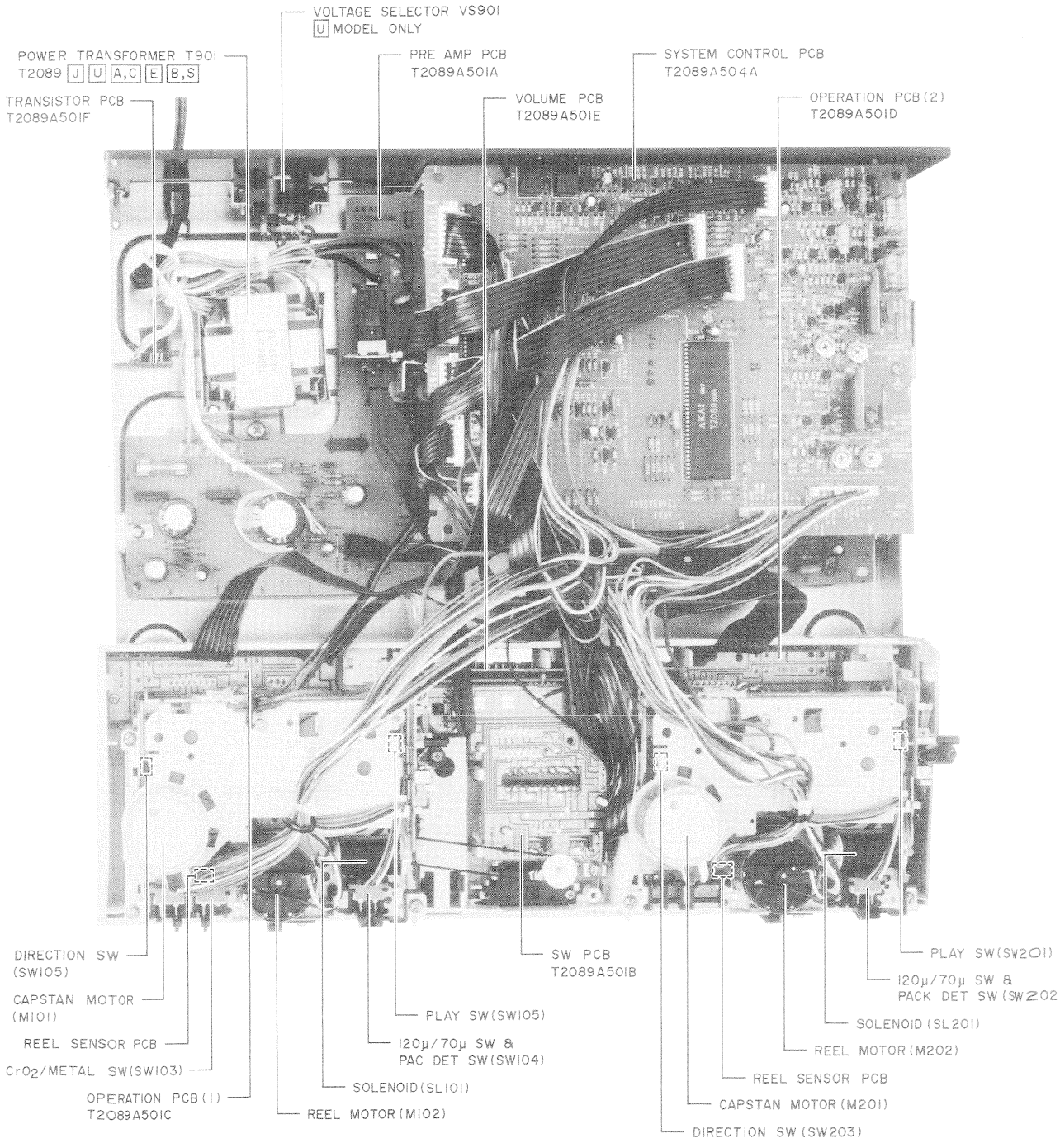



Fig. 3-1

# IV. MECHANICAL ADJUSTMENT

## 4-1 PINCH ROLLER PRESSURE MEASURMENT

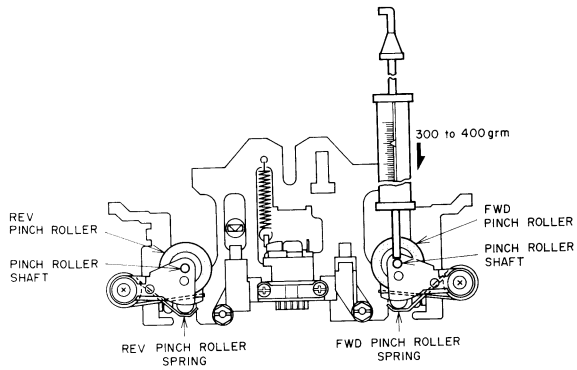



Fig. 4-1

Put in FWD PLAY Mode. Push Pinch roller shaft down with the spring gauge, and push the pinch roller 1 to 2mm away from the capstan and release slowly.
Read the spring gauge at the moment the pinch roller touches the capstan and begins to rotate. Specified contact pressure measurement is 300 to 400 grams.
If the correct measurement is not obtained, replace the pinch roller spring. Do the same for the reverse side.

## 4-2 WINDING TORQUE MEASUREMENT IN EACH MODE

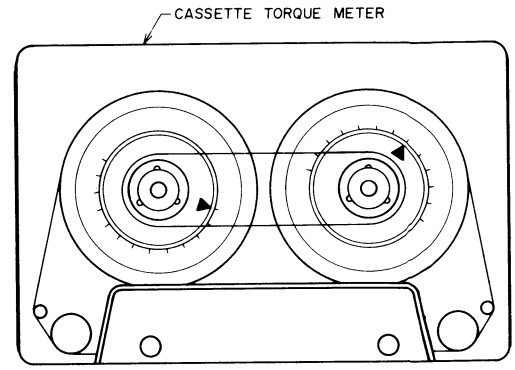



Fig. 4-2

Insert a cassette torque meter (AJ-751179) and measure in each mode, for Fast Forward and Rewind, measure at the end of the tape when the tape has stopped running.
Forward or Reverse mode
Take up Torque: $45^{+25}_{-15}$ g-cm (30 to 70g-cm)
Back Tension Torque: $4 \pm 2$g-cm (2 to 6g-cm)
Fast Forward or Rewind mode
Take up Torque: $100^{+80}_{-10}$ g-cm (90 to 180g-cm)

# V. HEAD ADJUSTMENT

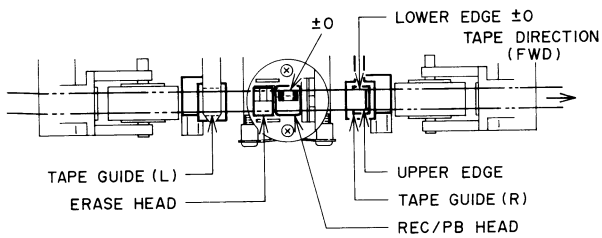



Fig. 5-1

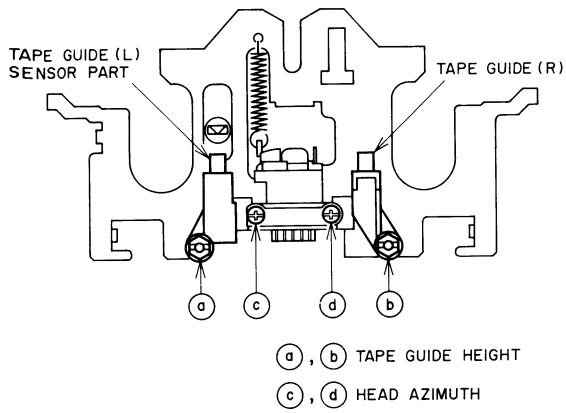



Fig. 5-2

## 5-1 TAPE GUIDE HEIGHT ADJUSTMENT

1) Use the mirror tape (AJ-751178) and adjust the tape guide height with turning the tape guide height adjustment nuts ⓐ and ⓑ so that when in FWD Play mode, the tape edge and the head edge match as in Fig.5-1
2) Play back the 315Hz OVU test tape (AT-750773) and adjust the tape guide height adjustments ⓐ and ⓑ so that the difference in level between Lch on FWD and Lch on REV is within 0.5 dBm.
3) Play back the 1kHz 4 Track test tape (AT-750775) and adjust the tape guide height adjustment nuts ⓐ and ⓑ so that the difference in level between this and the 315Hz tape in step 2) is within 2.0 dBm.
4) Repeat step 2) and step 3) until the optimum condition is achieved.
5) Use the mirror tape and check that the tape runs smoothly (The tape edge should not catch on the tape guide and should not curl.) If the tape edge catches on the tape guide, move the tape guide height adjustment nuts ⓐ and ⓑ slowly until the tape runs smoothly.
6) After adjustment, check step 2) and step 3) again.
7) After adjustment, paint-lock the tape guide height adjustment nuts ⓐ and ⓑ.

## 5-2 HEAD HEIGHT ADJUSTMENT

No adjustment is required for the height of the head itself. Follow the tape guide height adjustment procedures when the head is replaced and head height adjustment is required.

## 5-3 REC/PB HEAD AZIMUTH ALIGNMENT ADJUSTMENT

Play back the 10kHz test tape (AT-750778) for head azimuth adjustment and adjust screw ⓒ for the FWD direction and screw ⓓ for the REV direction, so that the level on both channels becomes maximum.

NOTES: 1. Be sure to clean the heads prior to head adjustment.
2. Be careful not to use a magnetized driver or other magnetized tools in the vicinity of the heads.
3. Be sure to demagnetize the heads with a head demagnetizer before and after head adjustment.

# VI. ELECTRICAL ADJUSTMENT

## 6-1 SYSCON PC BOARD ADJUSTMENT

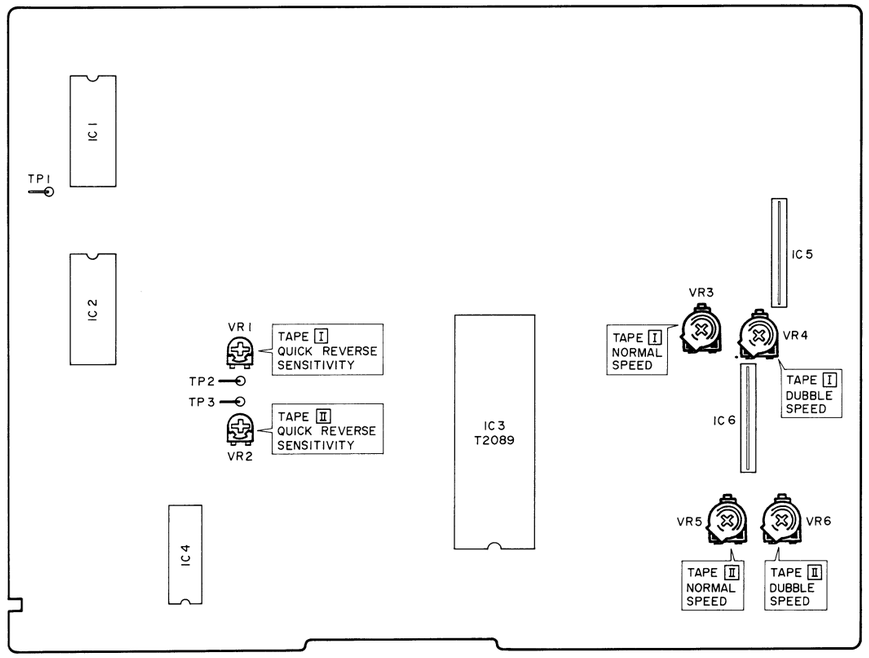



Fig. 6-1 SYSCON PCB. ADJUSTMENT POINTS

NOTE: 1. Adjust Double speed mode first, then Adjust Normal speed.
2. The TAPE II speed should be adjust 0.3% faster than the TAPE I speed.
3. Make a tapeless cassette pack by removeing the tape from the white colored test tape for the Quick Reverse sensitivity adjustment.
4. Clean the reference pole and the Detection tape guide before the Quick Reverse adjustment. refer to Fig.6-2
5. Set the reverse selector to ⟲ (endless mode)

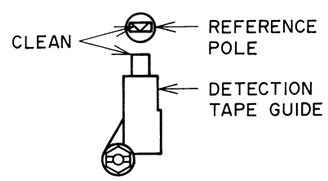



Fig. 6-2

| Step | Adjustment Item | Test tape & Input Signal | Mode | Test Point | Adjustment Point | Result & Remarks |
|---|---|---|---|---|---|---|
| 1 | Tape I Dubble Speed | 3150Hz Test Tape TF-110CT (AT-751263) | FWD PB with Dubble Speed * see remarks | Line out | VR4 | Unit set to Dubble speed mode (short the circuit TP1 and GND.) connect the Frequency Counter to Line Out and adjust VR4 so that FRQ. Counter reads 6280±60Hz |
| 2 | Tape II Dubble Speed | 3150Hz Test Tape TF-110CT (AT-751263) | FWD PB with Dubble Speed | Line out | VR6 | adjust VR6 so that FRQ. Counter reads 6280±60Hz disconnect short wire after the adjustment. |
| 3 | Tape I Normal Speed | 3150Hz Test Tape TF-110CT (AT-751263) | FWD PB | Line out | VR3 | adjust VR3 so that FRQ. Counter reads 3150±30Hz |
| 4 | Tape II Normal Speed | 3150Hz Test Tape TF-110CT (AT-751263) | FWD PB | Line out | VR5 | adjust VR5 so that FRQ. Counter reads 3150±30Hz |
| 5 | Tape I Quick Revers Sensitivity | Tapeless cassette pack * see NOTE3 | FWD PB | TP2 | VR1 | connect Digital Volt Meter to TP2 and adjust VR1 so that meter reads 4.0±0.1V |
| 6 | Tape II Quick Revers Sensitivity | Tapeless cassette pack | FWD PB | TP3 | VR2 | connect Digital Volt Meter to TP3 and adjust VR2 so that meter reads 4.0±0.1V |

## 6-2 PRE AMP PCB ADJUSTMENT

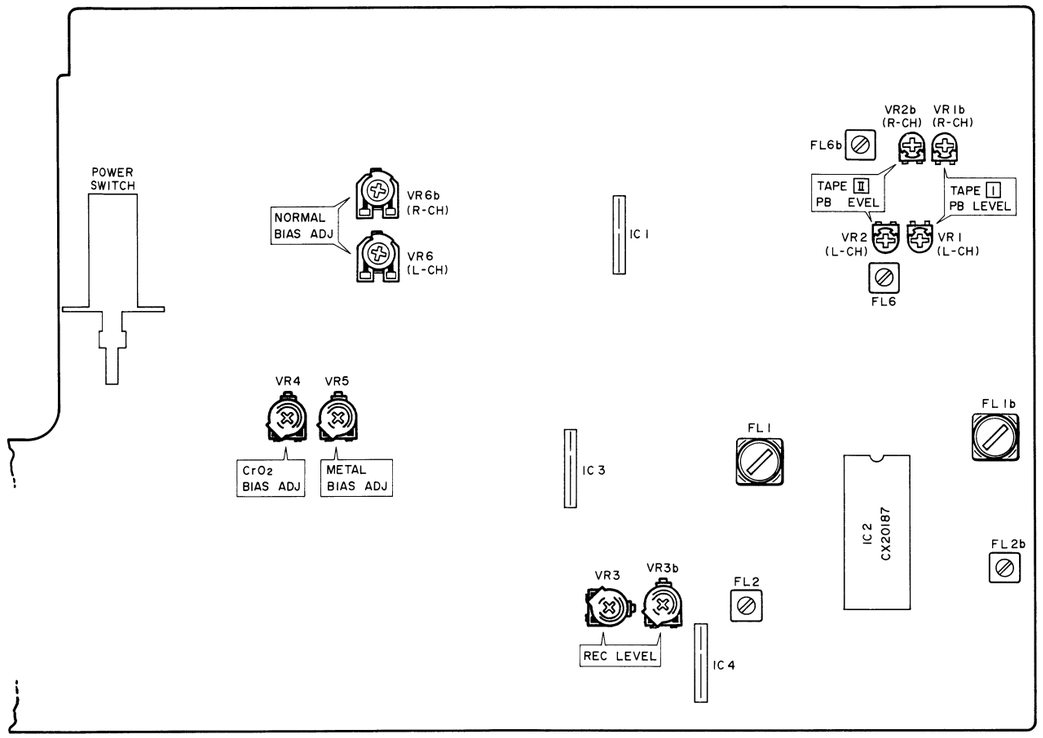



Fig. 6-3 PRE AMP PCB ADJUSTMENT POINTS

NOTES: 1. Set the DOLBY NR switch to OFF position for all the adjustments.
2. Use the following cassette measuring tapes.
NOMAL Tape : Maxell UDI C-60
$CrO_2$ Tape : TDK SA C-60
METAL Tape : TDK MA C-60

| Step | Adjustment Item | Test tape & Input Signal | Mode | Test Point | Adjustment Point | Result & Remarks |
|---|---|---|---|---|---|---|
| 1 | Tape I FWD PB Level | 315Hz Test Tape TF-101CL (AT-750773) | FWD PB | Line out | VR1b(R-ch) VR1(L-ch) | connect the AC volt meter to the Line out and adj. VR1b(R-ch), VR1(L-ch) so that meter reads −6.0±0.5dBm |
| 2 | Tape I REV PB Level | 315Hz Test Tape TF-101CL (AT-750773) | REV PB | Line out | conformation | −6.0±0.5dBm |
| 3 | Tape II FWD PB Level | 315Hz Test Tape TF-101CL (AT-750773) | FWD PB | Line out | VR2b(R-ch) VR2(L-ch) | −6.0±0.5dBm |
| 4 | Tape II REV PB Level | 315Hz Test Tape TF-101CL (AT-750773) | REV PB | Line out | conformation | −6.0±0.5dBm |
| 5 | Normal Bias | Normal Blank Tape and Sine wave 1kHz, 10kHz −26dBm from Oscillator | REC/PB | Line out | VR6b(R-ch) VR6(L-ch) | adjust VR6b(R-ch), VR6(L-ch) so that meter reads at 1kHz and 10kHz are flat. ±0.5dBm |
| 6 | CrO2 Bias | $CrO_2$ Blank Tape and Sine wave 1kHz, 10kHz -26dBm from Oscillator | REC/PB | Line out | VR4 | adjust VR4 so that meter reads at 1kHz and 10kHz are flat. ±0.5dBm |
| 7 | Metal Bias | Metal Blank Tape and Sine wave 1kHz, 10kHz -26dBm from Oscillator | REC/PB | Line out | VR5 | adjust VR5 so that meter reads at 1kHz and 10kHz are flat. ±0.5dBm |
| 8 | REC Level | Normal Blank Tape and Sine wave 315Hz -6dBm | REC/PB | Line out | VR3b(R-ch) VR3(L-ch) | adjust VR3b(R-ch) VR3(L-ch) so that meter reads −6.0±0.5dBm |

# VII. PARTS LIST

**ATTENTION**

1. **When placing an order for parts, be sure to list Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.**
2. **Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.**
3. **Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.**

## HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.

a) Mechanism Block

### 2. HEAD BASE BLOCK

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 2-1x | BH-T2023A320A | HEAD BASE BLOCK |
| 2-2 | HP-H2206A010A | HEAD R/P PR4-8FU C |
| 2-3 | ZS-477876 | PAN20×03STL CMT |
| 2-4 | ZS-536488 | BID20×08STL CMT |
| 2-5 | ZG-402895 | SP CS ANGLE ADJUST |

- SP (Service Parts) Classification
- A small "x" indicates that this part is not shown in the Photo or Illustration.
- This number corresponds with the individual parts index number in that figure.
- This number corresponds with the Figure Number.

b) PC Board

### 6. MAIN PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 6-IC1 | EI-324536 | IC HD14049BP |
| 6-IC2 | EI-336801 | IC MB8841-564M |
| 6-C1A | EC-338399 | C MMY V 223M 250AC [U,E,B,S] |
| 6-C1B | EC-350949 | C MMY V 223M 250DC [J] |
| 6-C1C | EC-338397 | C MMY V 223M 125AC [C,A] |
| 6-X1 | EI-318384 | OSC X'TAL NC-18C |

- Symbols for primary destination
  - [A]: AAL(U.S.A.) [S]: SAA(Australia)
  - [B]: BEAB(England) [U]: U/T(Universal Area)
  - [C]: CSA(Canada) [V]: VDE(W. Germany)
  - [E]: CEE(Europe) [Y]: Custom Version
  - [J]: JPN(Japan)
- SP (Service Parts) Classification
- These reference symbols correspond with component symbols in the Schematic Diagrams.

The available PC Board Blocks are listed separately.

5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No. listed at right of Part No.

**WARNING**

**⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS**

**AVERTISSEMENT**

**⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT**

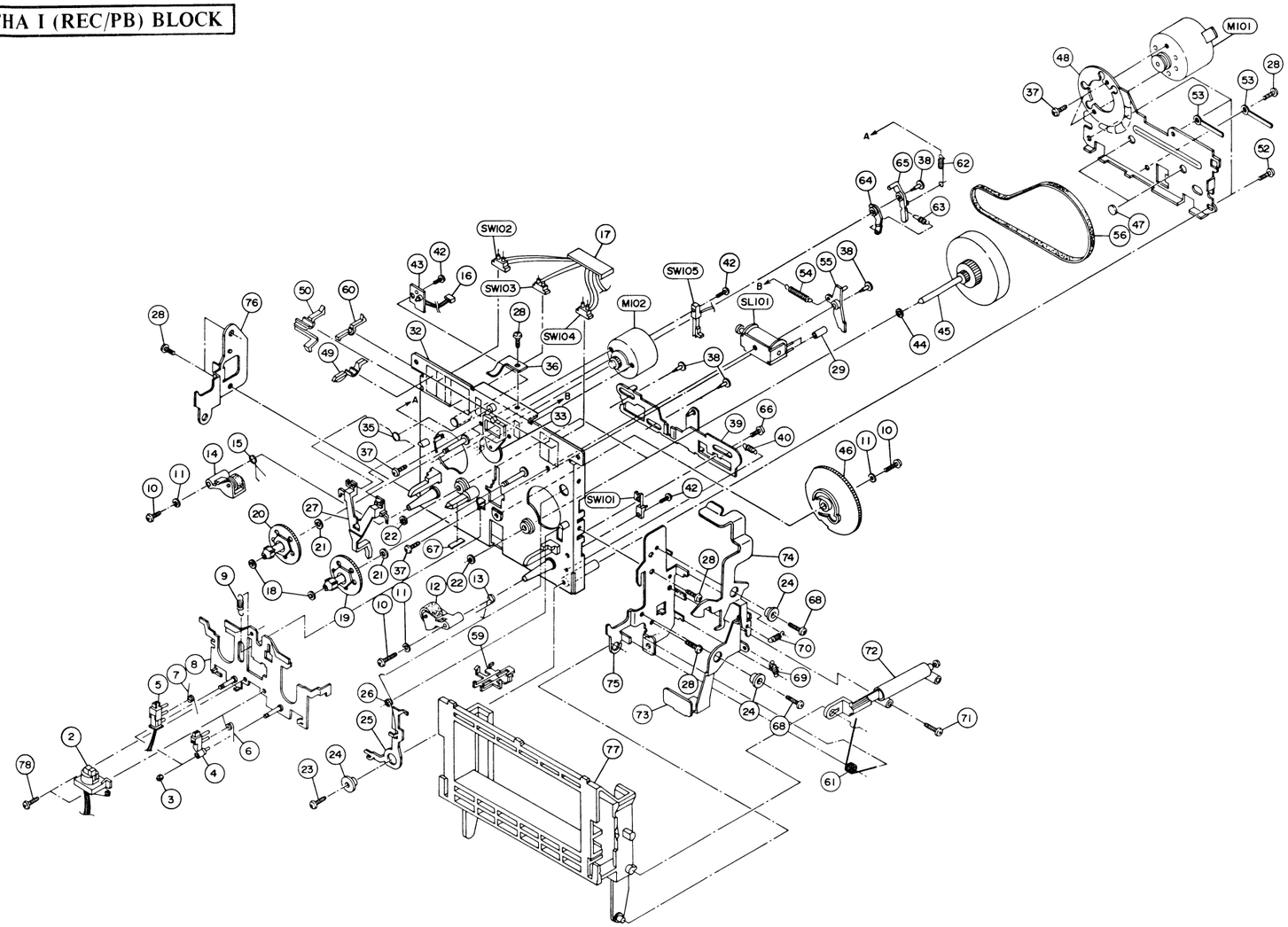
## RECOMMENDED SPARE PARTS LIST

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

| REF. NO. | | PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | N | BF-717852 | FLY WHEEL PART |
| 2 | N | BM-717859 | MOTOR CAPSTAN W/PULLEY MMA-6B2LWF |
| 3 | N | BM-717860 | MOTOR REEL W/GEAR RF-500T |
| 4 | N | BR-717842 | REEL PART |
| 5 | N | BR-717843 | REEL PART |
| 6 | N | BT-359967 | ⚠ TRANS POWER T2089[U] |
| 7 | N | BT-359969 | ⚠ TRANS POWER T2089[A,C] |
| 8 | N | BT-359971 | ⚠ TRANS POWER T2089[B,S] |
| 9 | N | BT-359970 | ⚠ TRANS POWER T2089[E,V] |
| 10 | | EC-353388 | C EC V CUT 04W 682M 16.0DC |
| 11 | | ED-330319 | ⚠ D SILICON DBA10B 100/1.0A |
| 12 | N | ED-359992 | D LED AY5608S AMBER |
| 13 | | ED-347777 | D LED BR5628S RED |
| 14 | N | ED-359974 | D LED GL-103N5 GREEN |
| 15 | N | ED-359975 | D LED GL-9PR23 RED |
| 16 | N | ED-363586 | D LED GL-9PR23 RED |
| 17 | | ED-349662 | D SILICON DS135E-FA6 F10 100/1.0A |
| 18 | | ED-301911 | D SILICON H DS448 |
| 19 | | ED-344280 | D SILICON H GMA-01-FY2 F05 |
| 20 | | ED-330989 | D ZENER H HZ11 B2 |
| 21 | | ED-306320 | D ZENER H HZ15 2 |
| 22 | | ED-337776 | D ZENER H H23 C1 |
| 23 | | ED-305655 | D ZENER H HZ4 B3 |
| 24 | | ED-306316 | D ZENER H HZ5 C2 |
| 25 | | ED-346603 | D ZENER H HZ6 A1 |
| 26 | | ED-319167 | D ZENER H HZ6 C3 |
| 27 | | EF-359007 | ⚠ FUSE BET T 1.25A 250V[B] |
| 28 | N | EF-355385 | ⚠ FUSE BET T 310MA 250V[B] |
| 29 | | EF-602550 | ⚠ FUSE SEMKO T 1.25A 250V[E,S] |
| 30 | | EF-695766 | ⚠ FUSE SEMKO T 310MA 250V[E,S] |
| 31 | | EF-327103 | ⚠ FUSE TSC A 250V 0.50A[U,J] |
| 32 | | EF-311839 | ⚠ FUSE TSC A 250V 1.60A[U,J] |
| 33 | | EF-309390 | ⚠ FUSE TSC 125V 0.50A[C,A] |
| 34 | | EF-308847 | ⚠ FUSE TSC 125V 1.60A[C,A] |
| 35 | | EH-336776 | FILTER DB D07003K 100kHz |
| 36 | | EH-354528 | FILTER DB FX-100B |
| 37 | N | EH-359984 | FILTER DOLBY T2089 |
| 38 | N | EI-361561 | IC BA3402 |
| 39 | | EI-330352 | IC BA6109 |
| 40 | N | EI-359985 | IC CX20187 |
| 41 | | EI-349874 | IC LB1245 |
| 42 | | EI-337008 | IC LC7800 |
| 43 | | EI-357498 | IC M51143AL |
| 44 | | EI-337228 | IC M5218L |
| 45 | N | EI-359990 | IC TMP47C-46N |
| 46 | | EI-349372 | OSC CE CSA4.00MG 4MHz |
| 47 | N | EP-717856 | SOLENOID PKA16122 |
| 48 | | ES-359606 | ⚠ SW SELECTOR 8T-41S0454 01-4 |
| 49 | N | ES-717849 | SW LEAF MSW-0058NBKP |
| 50 | N | ES-717844 | SW PUSH |
| 51 | N | ES-717846 | SW PUSH |
| 52 | | ES-358581 | SW PUSH J-U3065 01-1 |
| 53 | | ES-353296 | SW SLIDE SSSY12031A 2-02-02N |
| 54 | | ES-353708 | SW SLIDE SSSY12083A 2-02-03N |
| 55 | | ES-349367 | SW TACT SKHHAK003A |
| 56 | | ES-359988 | SW TACT SKHHAN |
| 57 | | ET-201580 | ⚠ TR 2SD894 |
| 58 | N | ET-717850 | PHOTO SENSOR NJL5141 W/PC BOARD |
| 59 | N | ET-717830 | SENSOR PART |
| 60 | N | ET-717874 | SENSOR PART NJL5146 |
| 61 | | ET-308472 | TR 2SA1115 E,F,G F05 |
| 62 | | ET-355626 | TR 2SA992 E,F |
| 63 | | ET-352334 | TR 2SB774 Q,R,S,T |
| 64 | | ET-347143 | TR 2SC1845 E,F |
| 65 | | ET-308977 | TR 2SC2274K F F05 |
| 66 | | ET-349705 | TR 2SC2320 E,F,G |
| 67 | | ET-308141 | TR 2SC2603 G F05 |
| 68 | | ET-357845 | TR 2SC3242A F,G F05 |
| 69 | | ET-349608 | TR 2SC3383 T,U |
| 70 | | ET-350795 | TR 2SC3399 F05 |
| 71 | | ET-349592 | TR 2SC3400 F05 |
| 72 | | ET-349366 | TR 2SC3402 F05 |
| 73 | | ET-338324 | TR 2SD1012-V H F05 |
| 74 | N | ET-362113 | ⚠ TR 2SD1406 Y,GR |
| 75 | | EV-356582 | R S-FIX H RH0615CS4J 3P 473 |
| 76 | N | EV-356679 | R S-FIX H RH0615CW3J 3P 682 |
| 77 | | EV-344109 | R S-FIX H RVF8P01 3P 102 |
| 78 | | EV-337995 | R S-FIX H RVF8P01 3P 103 |
| 79 | | EV-337993 | R S-FIX H RVF8P01 3P 203 |
| 80 | | EV-336785 | R S-FIX H TM8KV2-1S 3P 0.50W 104 |
| 81 | N | EV-359986 | VR SLIDE 45P VJ4513 5B-15A503X2 |
| 82 | N | HR-717826 | HEAD COMBO ROTARY HADRH5558A |
| 83 | N | HR-717872 | HEAD ROTARY HAYRH2407 |
| 84 | | MB-314722 | BELT COUNTER |
| 85 | N | MB-717858 | BELT MAIN |
| 86 | N | MI-717845 | IDLER BLK |
| 87 | N | MP-717837 | PINCH ROLLER PART (L) |
| 88 | N | MP-717835 | PINCH ROLLER PART (R) |
| 89 | N | MZ-717853 | GEAR CAM (B) |

"NOTE" N: New Parts

MECHA I (REC/PB) BLOCK



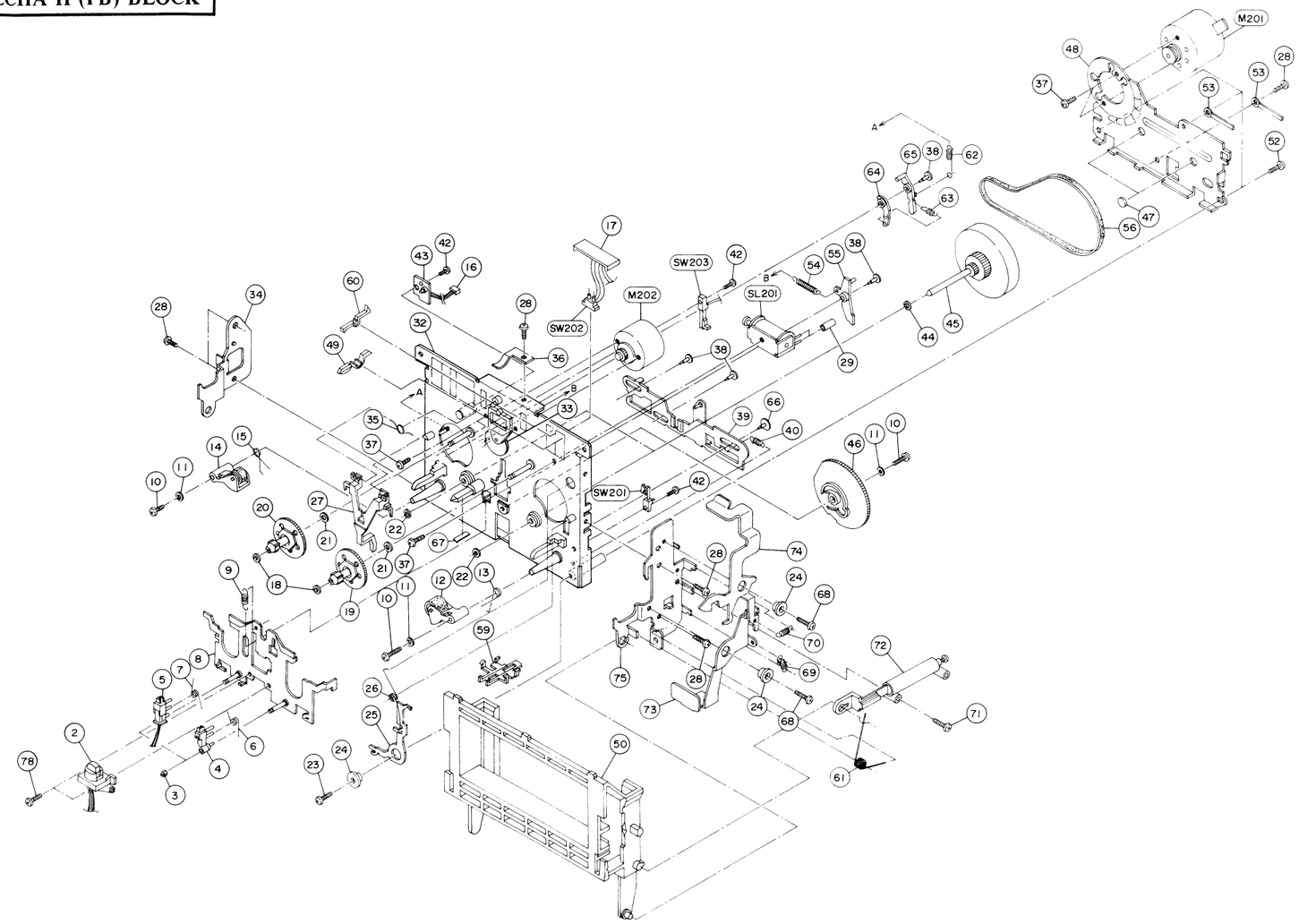

## 1. MECHA I (REC/PB) BLOCK

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 1-1 | BB-359972 | MECHA CMAY2Z027A |
| 1-2 | HR-717826 | HEAD COMBO ROTARY HADRH5558A |
| 1-2 | ZW-717828 | NUT ADJUSTMENT |
| 1-4 | MS-717829 | GUIDE TAPE |
| 1-5 | ET-717830 | SENSOR PART |
| 1-6 | ZG-717831 | SP ADJUST (R) |
| 1-7 | ZG-717832 | SP ADJUST (L) |
| 1-9 | ZG-717833 | SP HEAD BASE |
| 1-10 | ZS-717834 | SCREW 20×13 |
| 1-12 | MP-717835 | PINCH ROLLER PART (R) |
| 1-13 | ZG-717836 | SP PINCH ROLLER (R) |
| 1-14 | MP-717837 | PINCH ROLLER PART (L) |
| 1-15 | ZG-717839 | SP PINCH ROLLER (L) |
| 1-18 | ZW-717841 | WASHER PSL |
| 1-19 | BR-717842 | REEL PART |
| 1-20 | BR-717843 | REEL PART |
| 1-22 | ZW-704947 | WASHER OIL SEAL |
| 1-26 | ZG-717875 | SP ANTI EJECT (R) |
| 1-33 | MI-717845 | IDLER BLK |
| 1-35 | ZG-717847 | SP HOLD |
| 1-36 | ZG-717848 | SP PLATE CASSETTE HOLDER |
| 1-38 | SB-704944 | CAP |
| 1-43 | ET-717850 | PHOTO SENSOR NJL5141 W/PC BOARD |
| 1-45 | BF-717852 | FLY WHEEL PART |
| 1-46 | MZ-717853 | GEAR CAM (B) |
| 1-49 | ML-717854 | LEVER PACK DETECTION |
| 1-50 | ML-717855 | LEVER METAL DETECTOR |
| 1-55 | ML-717857 | ARM PALY PART |
| 1-56 | MB-717858 | BELT MAIN |
| 1-60 | ML-717861 | LEVER REC DETECTOR |
| 1-61 | ZG-717863 | SP DOOR |
| 1-62 | ZG-717864 | SP TURN |
| 1-64 | ML-717865 | ARM (A) |
| 1-65 | ML-717866 | ARM (B) |
| 1-66 | SB-717867 | CAP |
| 1-69 | ZG-717868 | SP LEVER (A) |
| 1-70 | ZG-717869 | SP LEVER (B) |
| 1-72 | TC-706398 | DAMPER ASSY |
| 1-77 | TC-717870 | LID CASE |
| 1-78 | ZS-717825 | SCREEN W/WASHER |
| 1-M101 | BM-717859 | MOTOR CAPSTAN W/PULLEY MMA-6B2 LWF |
| 1-M102 | BM-717860 | MOTOR REEL W/GEAR RF-500T |
| 1-SW101 | ES-717849 | SW LEAF MSW-0058NBKP |
| 1-SW102 | ES-717844 | SW PUSH |
| 1-SW103 | ES-717846 | SW PUSH |
| 1-SW104 | ES-717846 | SW PUSH |
| 1-SW105 | ES-717849 | SW LEAF MSW-0058NBKP |
| 1-SL101 | EP-717856 | SOLENOID PKA16122 |

NOTE

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## MECHA II (PB) BLOCK




## 2. MECHA II (PB) BLOCK

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 2-1 | BB-359973 | MECHA CMAY22028A |
| 2-2 | HR-717872 | HEAD ROTARY HAYRH2407 |
| 2-3 | ZW-717828 | NUT ADJUSTMENT |
| 2-4 | MS-717829 | GUIDE TAPE |
| 2-5 | ET-717874 | SENSOR PART NJL5146 |
| 2-6 | ZG-717831 | SP ADJUST (R) |
| 2-7 | ZG-717832 | SP ADJUST (L) |
| 2-9 | ZG-717833 | SP HEAD BASE |
| 2-10 | ZS-717834 | SCREW 20x13 |
| 2-12 | MP-717835 | PINCH ROLLER PART (R) |
| 2-13 | ZG-717836 | SP PINCH ROLLER (R) |
| 2-14 | MP-717837 | PINCH ROLLER PART (L) |
| 2-15 | ZG-717839 | SP PINCH ROLLER (L) |
| 2-18 | ZW-717841 | WASHER PSL |
| 2-19 | BR-717842 | REEL PART |
| 2-20 | BR-717843 | REEL PART |
| 2-22 | ZW-704947 | WASHER OIL SEAL |
| 2-26 | ZG-717875 | SP ANTI EJECT (R) |

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 2-33 | MI-717845 | IDLER BLK |
| 2-35 | ZG-717847 | SP HOLD |
| 2-36 | ZG-717848 | SP PLATE CASSETTE HOLDER |
| 2-38 | SB-704944 | CAP |
| 2-43 | ET-717850 | PHOTO SENSOR NJL5141 W/PC BOARD |
| 2-45 | BF-717852 | FLY WHEEL PART |
| 2-46 | MZ-717853 | GEAR CAM (B) |
| 2-49 | ML-717871 | LEVER PACK DETECTOR |
| 2-50 | TC-717870 | LID CASE |
| 2-55 | ML-717857 | ARM PLAY PART |
| 2-56 | MB-717858 | BELT MAIN |
| 2-60 | ML-717861 | LEVER REC DETECTOR |
| 2-61 | ZG-717863 | SP DOOR |
| 2-62 | ZG-717864 | SP TURN |
| 2-64 | ML-717865 | ARM (A) |
| 2-65 | ML-717866 | ARM (B) |
| 2-66 | SB-717867 | CAP |
| 2-69 | ZG-717868 | SP LEVER (A) |

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 2-70 | ZG-717869 | SP LEVER (B) |
| 2-72 | TC-706398 | DAMPER ASSY |
| 2-78 | ZS-717825 | SCREW W/WASHER |
| 2-M201 | BM-717859 | MOTOR CAPSTAN W/PULLEY MMA-6B2LWF |
| 2-M202 | BM-717860 | MOTOR REEL W/GEAR RF-500T |
| 2-SW201 | ES-717849 | SW LEAF MSW-0058NBKP |
| 2-SW202 | ES-717844 | SW PUSH |
| 2-SW203 | ES-717849 | SW LEAF MSW-0058NBKP |
| 2-SL201 | EP-717856 | SOLENOID PKA16122 |

NOTE

Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

## 3. PC BOARD BLOCK

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 3-1 | BA-T2089A030A | PC PRE AMP BLK HX-M515W [U,J] |
| 3-1A | BA-T2089A030B | PC PRE AMP BLK HX-M515W [C,A] |
| 3-1B | BA-T2089A030C | PC PRE AMP BLK HX-M515W [E,B,S] |
| 3-2 | BA-T2089A040A | PC PRE AMP BLK HX-M515W |

NOTE: PC PRE AMP BLK consists of following PC BOARDS.
- PRE AMP PC BOARD
- OPERATION TAPE 1 PC BOARD
- OPERATION TAPE 2 PC BOARD
- SW PC BOARD
- TR PC BOARD

## 4. PRE AMP PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **PRE AMP PC BOARD** | |
| 4-IC1 | EI-361561 | IC BA3402 |
| 4-IC2 | EI-359985 | IC CX20187 |
| 4-IC3 | EI-337228 | IC M5218L |
| 4-IC4 | EI-357498 | IC M51143AL |
| 4-TR1,2 | ET-347143 | TR 2SC1845 |
| 4-TR3 | ET-355626 | TR 2SA992 E,F |
| 4-TR4 | ET-349608 | TR 2SC3383 T,U, |
| 4-TR5 | ET-349705 | TR 2SC2320 E,F,G |
| 4-TR6 to 8 | ET-349366 | TR 2SC3402 F05 |
| 4-TR9 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 4-TR10 to 15 | ET-349592 | TR 2SC3400 F05 |
| 4-TR16 | ET-349366 | TR 2SC3402 F05 |
| 4-TR17 to 24 | ET-349608 | TR 2SC3383 T,U |
| 4-TR26 to 31 | ET-362113 | ⚠ TR 2SD1406 Y,GR |
| 4-TR32,33 | ET-308977 | TR 2SC2274K F F05 |
| 4-TR35 to 38 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 4-TR39 | ET-349366 | TR 2SC3402 F05 |
| 4-TR40 | ET-357845 | ⚠ TR 2SC3242A F,G F05 |
| 4-TR43 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 4-TR44 | ET-349608 | ⚠ TR 2SC3383 T,U |
| 4-D1 | ED-337776 | D ZENER H HZ3 C1 |
| 4-D2 | ED-330319 | ⚠ D SILICON DBA10B 100/1.0A |
| 4-D3 | ED-306320 | D ZENER H HZ15 2 |
| 4-D4 | ED-330319 | ⚠ D SILICON DBA10B 100/1.0A |
| 4-D5 | ED-349662 | ⚠ D SILICON DS135E-FA6 F10 100/1.0A |
| 4-D6 | ED-319167 | D ZENER H HZ6 C3 |
| 4-D7 | ED-346603 | D ZENER H HZ6 A1 |
| 4-D8 to 10 | ED-301911 | D SILICON H DS448 |
| 4-D11 | ED-330989 | D ZENER H HZ11 B2 |
| 4-D12 | ED-319167 | D ZENER H HZ6 C3 |
| 4-SW1 | ES-358581 | SW PUSH J-U3065 01-1 |
| 4-VR1,2 | EV-356582 | R S-FIX H RH0615 CS4J 3P 473 |
| 4-VR3 | EV-337993 | R S-FIX H RVF8P01 3P 203 |
| 4-VR4 | EV-337995 | R S-FIX H RVF8P01 3P 103 |
| 4-VR5 | EV-344109 | R S-FIX H RVF8P01 3P 102 |
| 4-VR6 | EV-336785 | R S-FIX H TM8KV2-1S 3P 0.50W 104 |
| 4-FL1 | EH-354528 | FILTER DB FX-100B |
| 4-FL2 | EH-359984 | FILTER DOLBY T2089 |
| 4-FL3 | EO-356809 | COIL FIX 1 100Z-121 100.00KC |
| 4-FL4 | EO-360140 | COIL FIX 1 L-8 822J |
| 4-FL5 | EO-361913 | COIL FIX 1 L-8 |
| 4-FL6 | EH-336776 | FILTER DB D07003K 100kHz |
| 4-T1 | EO-359575 | COIL OSC1 32-5034-12 |
| 4-R30 | ER-338228 | R MF H F10 1/4W 104J |
| 4-R37 | ER-338224 | R MF H F10 1/4W 392J |
| 4-R38 | ER-356247 | R MF H F10 1/4W 2701G |
| 4-R96,97 | ER-359738 | ⚠ R OMF H S15 FS 1W 151J |
| 4-C2 | EC-314992 | C STY V S05 CQFS 681J 50DC |
| 4-C3 | EC-306017 | C STY V F05 CQ09S 221J 50DC |
| 4-C4 | EC-307494 | C STY V F05 CQ09S 331J 50DC |
| 4-C7 | EC-361261 | C EV V F05 SE 102M 6.3DC |
| 4-C54 | EC-347247 | C MC V F05 FM 101J 500DC |
| 4-C55 | EC-326138 | C PP V F10 APH 182J 630DC |
| 4-C62 | EC-352478 | C EC V CUT SE 102M 25.0DC |
| 4-C65 | EC-362296 | C EC V CUT 103M 25.0DC |
| 4-C71 | EC-320548 | C CE V F 103Z 250AC |
| 4-C71A | EC-338411 | C CE V FZ 103P 400AC [E,B,S] |
| 4-J1 | EJ-336905 | PIN J AJC-035-ACB P 4P |
| | **ASSEMBLY BLOCK** | |
| 4-F1 | EF-327103 | ⚠ FUSE TSC A 250V 0.50A [U,J] |
| 4-F1A | EF-309390 | ⚠ FUSE TSC 125V 0.50A [C,A] |
| 4-F1B | EF-695766 | ⚠ FUSE SEMKO T 310MA 250V [E,S] |
| 4-F1C | EF-355385 | ⚠ FUSE BET T 310MA 250V [B] |
| 4-F2 | EF-311839 | ⚠ FUSE TSC A 250V 1.60A [U,J] |
| 4-F2A | EF-308847 | ⚠ FUSE TSC 125V 1.60A [C,A] |
| 4-F2B | EF-602550 | ⚠ FUSE SEMKO T 1.25A 250V [E,S] |
| 4-F2C | EF-359007 | ⚠ FUSE BET T 1.25A 250V [B] |

## 5. SYSCON PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 5-IC1,2 | EI-337008 | IC LC7800 |
| 5-IC3 | EI-359990 | IC TMP47C-46N |
| 5-IC4 | EI-349874 | IC LB1245 |
| 5-IC5,6 | EI-330352 | IC BA6109 |
| 5-TR1 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR2 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR3,4 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR5 | ET-349366 | TR 2SC3402 F05 |
| 5-TR6 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR7 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR8,9 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR10 | ET-349366 | TR 2SC3402 F05 |
| 5-TR11 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR12 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR13 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR14 | ET-357845 | TR 2SC3242A F,G F05 |
| 5-TR15 | ET-349366 | TR 2SC3402 F05 |
| 5-TR16,17 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR18,19 | ET-357845 | TR 2SC3242A F,G F05 |
| 5-TR20 | ET-349366 | TR 2SC3402 F05 |
| 5-TR21 | ET-338324 | TR 2SD1012-V H F05 |
| 5-TR22 | ET-349366 | TR 2SC3402 F05 |
| 5-TR23 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR24 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR25 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR26 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR27 | ET-357845 | TR 2SC3242A F,G F05 |
| 5-TR28 | ET-349366 | TR 2SC3402 F05 |
| 5-TR29,30 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR31,32 | ET-357845 | TR 2SC3242A F,G F05 |
| 5-TR33 | ET-349366 | TR 2SC3402 F05 |
| 5-TR34 | ET-338324 | TR 2SD1012-V H F05 |
| 5-TR35 | ET-349366 | TR 2SC3402 F05 |
| 5-TR36 | ET-308472 | TR 2SA1115 E,F,G F05 |
| 5-TR37,38 | ET-350795 | TR 2SC3399 F05 |
| 5-TR39,40 | ET-308141 | TR 2SC2603 G F05 |
| 5-TR41 to 43 | ET-350795 | TR 2SC3399 F05 |
| 5-TR44 | ET-352334 | TR 2SB774 Q,R,S,T |
| 5-TR45 | ET-350795 | TR 2SC3399 F05 |
| 5-TR46 | ET-352334 | TR 2SB774 Q,R,S,T |
| 5-TR47 | ET-350795 | TR 2SC3399 F05 |
| 5-TR48,49 | ET-308141 | TR 2SC2603 G F05 |
| 5-D1,2 | ED-349662 | D SILICON DS135E-FA6 F10 100/1.0A |
| 5-D3 | ED-305655 | D ZENER H HZ4 B3 |
| 5-D4 | ED-306316 | D ZENER H HZ5 C2 |
| 5-D5 | ED-305655 | D ZENER H HZ4 B3 |
| 5-D6 | ED-306316 | D ZENER H HZ5 C2 |
| 5-D7 to 14 | ED-344280 | D SILICON H GMA-01-FY2 F05 |
| 5-D15 | ED-301911 | D SILICON H DS448 |
| 5-VR1,2 | EV-356679 | R S-FIX H RH0615CW3J 3P 682 |
| 5-VR3 | EV-337993 | R S-FIX H RVF8P01 3P 203 |
| 5-VR4 | EV-337995 | R S-FIX H RVF8P01 3P 103 |
| 5-VR5 | EV-337993 | R S-FIX H RVF8P01 3P 203 |
| 5-VR6 | EV-337995 | R S-FIX H RVF8P01 3P 103 |
| 5-X1 | EI-349372 | OSC CE CSA4.00MG 4MHz |
| 5-R33 | ER-321228 | R CB H S15 FS RDS 1/2W 471J |
| 5-R40 | ER-306805 | R CB H S15 FS RDS 1/2W 101J |

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 5-R41 | ER-363986 | R OMF H S15 FS 2W 101J |
| 5-R65 | ER-321228 | R CB H S15 FS RDS 1/2W 471J |
| 5-R72 | ER-306805 | R CB H S15 FS RDS 1/2W 101J |
| 5-R73 | ER-363986 | R OMF H S15 FS 2W 101J |
| 5-R115 to 118 | ER-361284 | R OMF H S15 FS 2W 750J |
| 5-J1,2 | EJ-344368 | PHONE J 3P HSJ0847-010 3.5 |

## 6. METER PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **METER PC BOARD** | |
| 6-IC101 | EI-355388 | IC IR2E27 |
| 6-TS101 | ES-359988 | SW TACT SKHHAN |
| 6-TS102 | ES-359988 | SW TACT SKHHAN |
| 6-VR101 | EV-359986 | VR SLIDE 45P VJ4513 5B-15A503X2 |
| | **ASSEMBLY BLOCK** | |
| 6-D901 | ED-359974 | D LED GL-103N5 GREEN |
| 6-D902 | ED-363586 | D LED GL-9PR23 RED |
| 6-D903 | ED-363586 | D LED GL-9PR23 RED |
| 6-D904 | ED-359975 | D LED GL-9PR23 RED |
| 6-D905 | ED-359975 | D LED GL-9PR23 RED |

## 7. OPERATION TAPE 1 PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 7-D201 | ED-359992 | D LED AY5608S AMBER |
| 7-D202 | ED-359992 | D LED AY5608S AMBER |
| 7-D203 | ED-347777 | D LED BR5628S RED |
| 7-TS201 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS202 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS203 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS204 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS205 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS206 | ES-349367 | SW TACT SKHHAK003A |
| 7-TS207 | ES-349367 | SW TACT SKHHAK003A |

## 8. OPERATION TAPE 2 PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 8-D301 | ED-359992 | D LED AY5608S AMBER |
| 8-D302 | ED-359992 | D LED AY5608S AMBER |
| 8-TS301 | ES-349367 | SW TACT SKHHAK003A |
| 8-TS302 | ES-349367 | SW TACT SKHHAK003A |
| 8-TS303 | ES-349367 | SW TACT SKHHAK003A |
| 8-TS304 | ES-349367 | SW TACT SKHHAK003A |
| 8-TS305 | ES-349367 | SW TACT SKHHAK003A |

## 9. SW PC BOARD

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 9-SW401 | ES-353296 | SW SLIDE SSSY12031A 2-02-02N |
| 9-SW402 | ES-353708 | SW SLIDE SSSY12083A 2-02-03N |
| 9-SW403 | ES-353708 | SW SLIDE SSSY12083A 2-02-03N |
| 9-SW404 | ES-353708 | SW SLIDE SSSY12083A 2-02-03N |

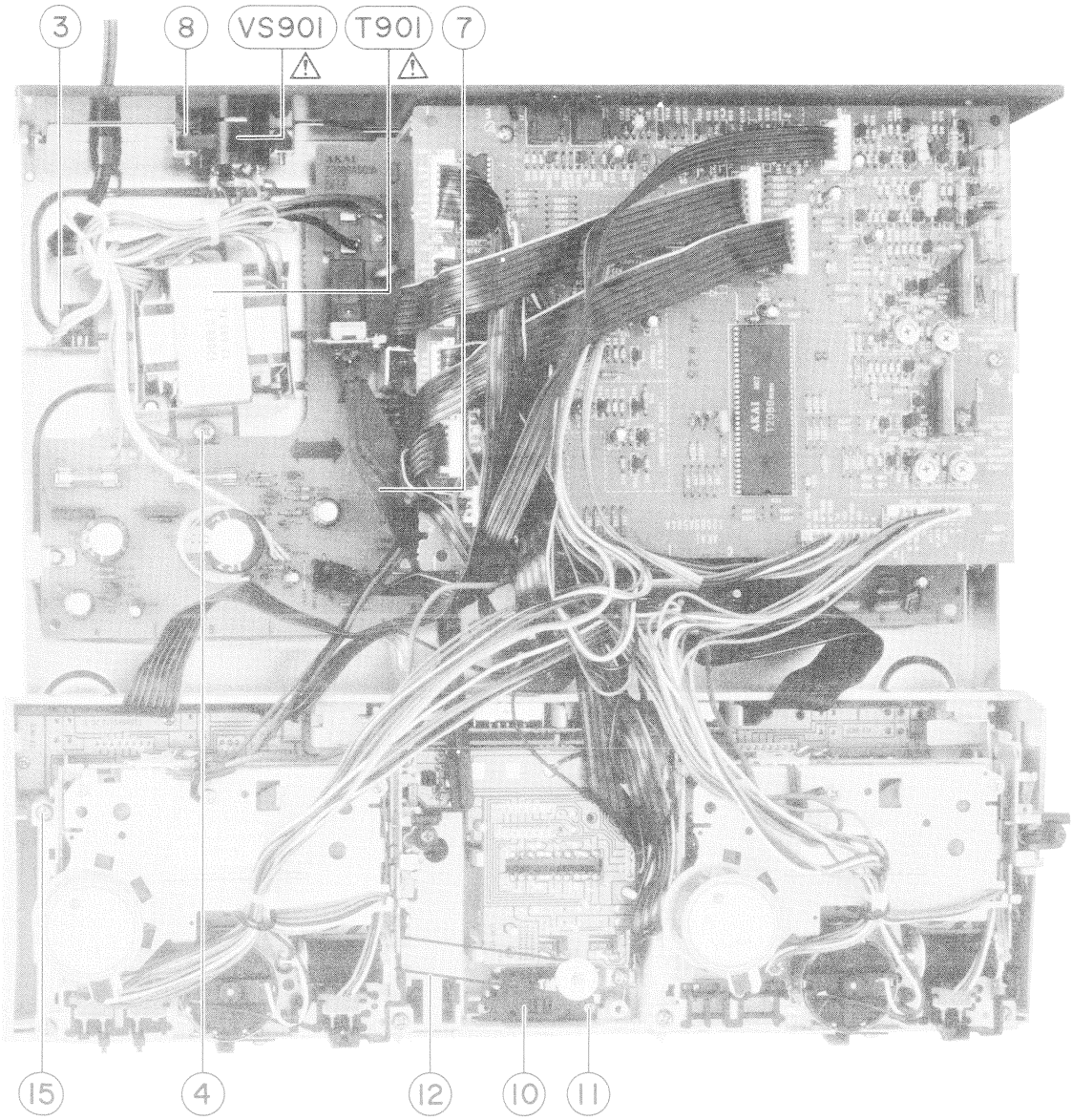
## 10. TR PC BOARD

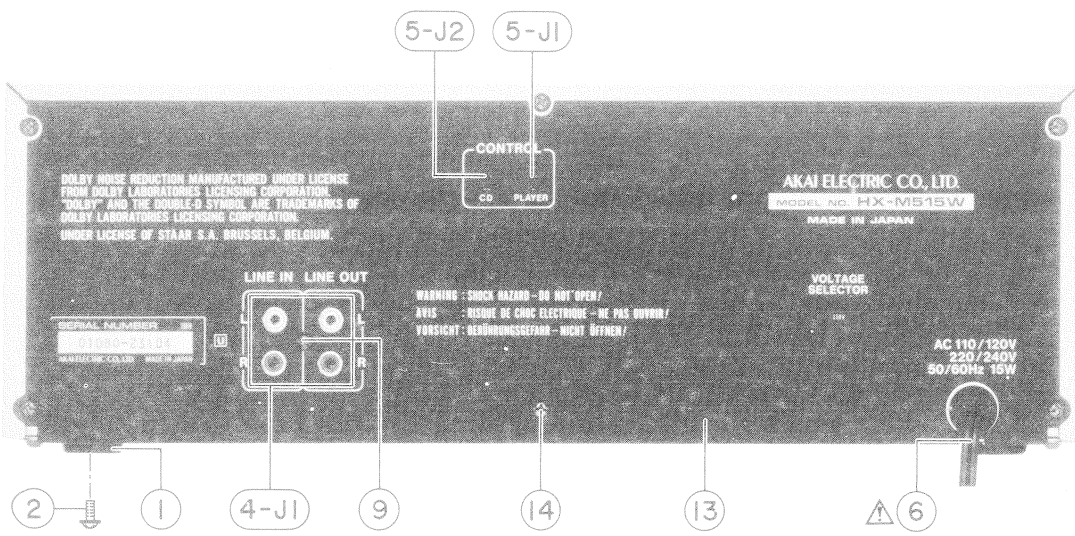
| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| 10-TR501 | ET-201580 | ⚠ TR 2SD894 |

## 11. ASSEMBLY BLOCK

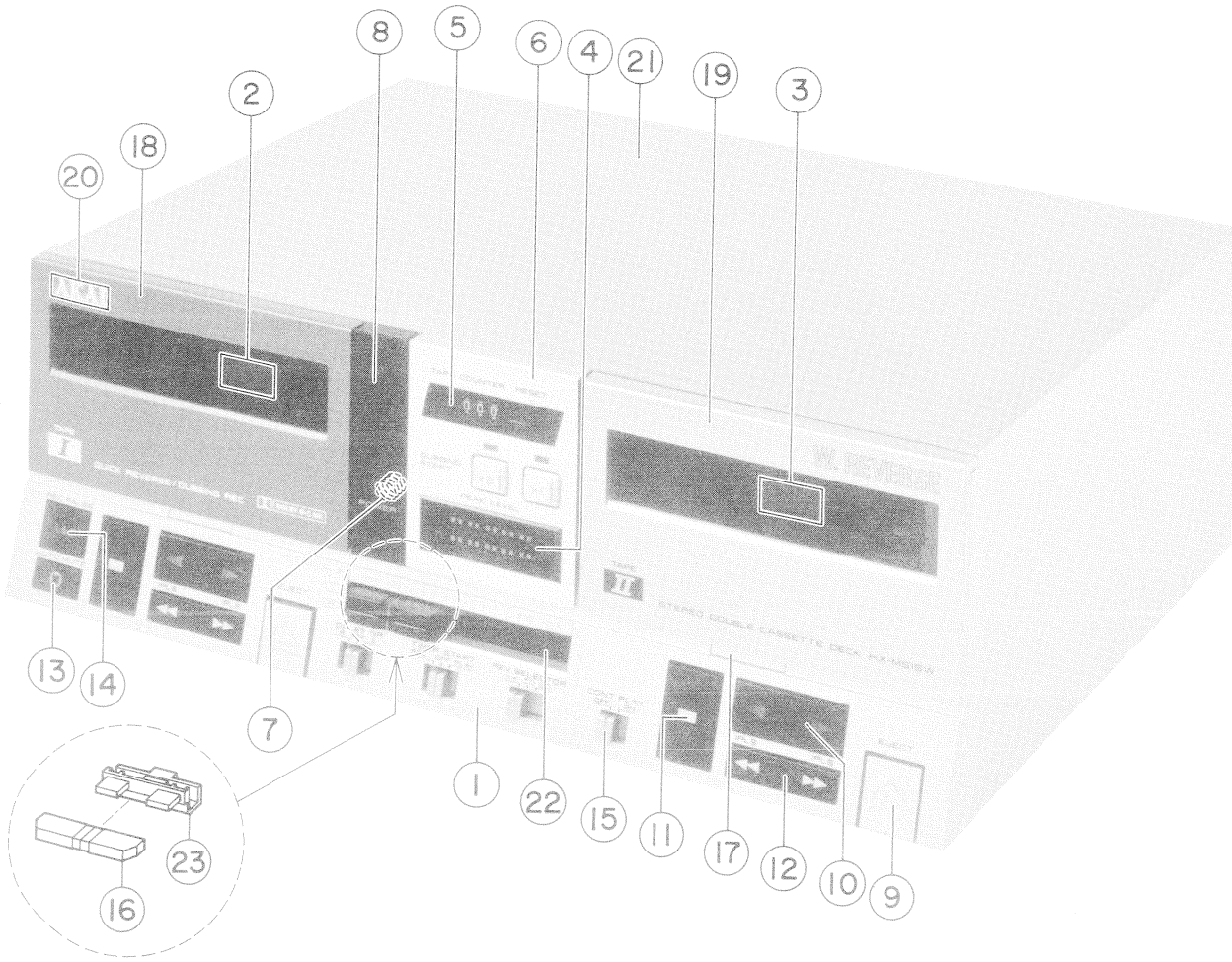
| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **ASSEMBLY BLOCK** | |
| 11-1 | SA-202118 | FOOT |
| 11-2 | ZS-351186 | ST BR30X08STL CMT C080 (FOOT FIX) |
| 11-3 | EZ-200473 | SILICON RUBBER SHEET TC-30 (FOR TR501) |
| 11-4 | ZS-314702 | ST BID40X10STL CMT (TRANS POWER FIX) |
| 11-5x | ZW-273914 | SW40 (TRANS POWER FIX) |
| 11-6 | EW-347604 | ⚠ AC CORD 2 CORES VM1165B J [J] |
| 11-6A | EW-347683 | ⚠ AC CORD 2 CORES VM0129A,VFF-CB U/T [U] |
| 11-6B | EW-348215 | ⚠ AC CORD 2 CORES KP10,SPT1 105CCB UC [C,A] |
| 11-6C | EW-347682 | ⚠ AC CORD 2 CORES VM0364,FC3097-CB EV [E] |
| 11-6D | EW-347680 | ⚠ AC CORD 2 CORES LCFL2X0.75-CB B [B] |
| 11-6E | EW-347681 | ⚠ AC CORD 2 CORES VM0436,FC3093-CB S [S] |
| 11-7 | MZ-359935 | JOINT POWER |
| 11-8 | ZS-352133 | ST BR30X10STL CMT [U] |
| 11-9 | ZS-350934 | PT BR30X08STL BNI |
| 11-10 | MC-364134 | COUNTER MK-397-032 |
| 11-11 | ZS-336614 | PT PAN26X08STL CMT (COUNTER FIX) |
| 11-12 | MB-314722 | BELT COUNTER S223M |
| 11-13 | SP-359800K | PANEL REAR HX-M515W [J] |
| 11-13A | SP-359800F | PANEL REAR HX-M515W [U] |
| 11-13B | SP-359800G | PANEL REAR HX-M515W [C,A] |
| 11-13C | SP-359800H | PANEL REAR HX-M515W [E,V] |
| 11-13D | SP-359800J | PANEL REAR HX-M515W [B,S] |
| 11-14 | ZS-354403 | ST BR30X08STL BNI (PANEL REAR FIX) |
| 11-15 | ZS-323993 | PT BR30X10STL CMT (MECHA BLK FIX) |
| 11-T901 | BR-359968 | ⚠ TRANS POWER T2089 [J] |
| 11-T901A | BT-359967 | ⚠ TRANS POWER T2089 [U] |
| 11-T901B | BT-359969 | ⚠ TRANS POWER T2089 [A,C] |
| 11-T901C | BT-359970 | ⚠ TRANS POWER T2089 [E,V] |
| 11-T901D | BT-359971 | ⚠ TRAMS POWER T2089 [B,S] |
| 11-VS901 | ES-359606 | ⚠ SW SELECTOR 8T-41S0454 01-4 [U] |
| | **PRE AMP PC BOARD** | |
| 4-J1 | EJ-336905 | PIN J AJC-035-ACB P 4P |
| | **SYSCON PC BOARD** | |
| 5-J1 | EJ-344368 | PHONE J 3P HSJ0847-010 3.50 |
| 5-J2 | EJ-344368 | PHONE J 3P HSJ0847-010 3.50 |

## ASSEMBLY BLOCK





5-J2
5-J1
CONTROL
CD PLAYER
DOLBY NOISE REDUCTION MANUFACTURED UNDER LICENSE FROM DOLBY LABORATORIES LICENSING CORPORATION. "DOLBY" AND THE DOUBLE-D SYMBOL ARE TRADEMARKS OF DOLBY LABORATORIES LICENSING CORPORATION. UNDER LICENSE OF STAAR S.A. BRUSSELS, BELGIUM.
AKAI ELECTRIC CO., LTD.
MODEL NO. HX-M515W
MADE IN JAPAN
LINE IN LINE OUT
WARNING : SHOCK HAZARD - DO NOT OPEN /
AVIS : RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR /
VORSICHT : BERÜHRUNGSGEFAHR - NICHT ÖFFNEN /
VOLTAGE SELECTOR
AC 110/120V 220/240V 50/60Hz 15W
2
1
4-J1
9
14
13
6

FINAL ASSEMBLY BLOCK




## 12. FINAL ASSEMBLY BLOCK

| REF. NO. | PART NO. | DESCRIPTION |
|---|---|---|
| | **PANEL FRONT BLOCK** | |
| 12-1 | BD-T2089A020A | PANEL FRONT BLK HX-M515W |
| 12-1-B | BD-T2089A020B | PANEL FRONT BLK HS-M515W-B |
| 12-2 | SZ-357722 | REFLECTOR |
| 12-3 | SZ-359780 | REFLECTOR (B) |
| 12-4 | SZ-359923 | WINDOW METER |
| 12-5 | SZ-359790 | WINDOW COUNTER |
| 12-6 | SP-359927A | PANEL SUB |
| 12-6-B | SP-359927B | PANEL SUB-B |
| 12-7 | ZG-313186 | SP C-04.5/0.40-31.5 C-033 |
| 12-8 | SK-359797A | KNOB POWER |
| 12-9 | SK-359928A | KNOB EJECT |
| 12-9-B | SK-359928B | KNOB EJECT (B) |
| 12-10 | SK-B359925A | KNOB OPERATION PLAY PART |
| 12-11 | SK-359925B | KNOB OPERATION STOP |
| 12-11-B | SK-359925C | KNOB OPERATION STOP-B |
| 12-12 | SK-359925D | KNOB OPERATION FAST |
| 12-12-B | SK-359925E | KNOB OPERATION FAST-B |
| 12-13 | SK-362289A | KNOB OPERATION MUTE |
| 12-14 | SK-B364455 | KNOB OPERATION REC PART |
| | **FINAL ASSEMBLY BLOCK** | |
| 12-15 | SK-359929A | KNOB SLIDE |
| 12-15-B | SK-359929B | KNOB SLIDE-B |
| 12-16 | SK-345270 | KNOB REC CAP |
| 12-17 | SC-359931A | COVER AZIMUTH |
| 12-17-B | SC-359931B | COVER AZIMUTH-B |
| 12-18 | BD-B359802C | LID (1) HX-M515W PART |
| 12-18-B | BD-B359802D | LID (1)-B HX-M515W PART |
| 12-19 | BD-B359803C | LID (2) HX-M515W PART [J] |
| 12-19A | BD-B359803E | LID (2) HX-M515W (U) PART [EXCEPT J] |
| 12-19-B | BD-B359803D | LID (2)-B HX-M515W PART [J] |
| 12-19A-B | BD-B359803F | LID (2)-B HX-M515W PART [EXCEPT J] |
| 12-20 | SM-361028 | NAME PLATE |
| 12-20-B | SM-361028B | NAME PLATE (B) |
| 12-21 | SP-359798A | COVER UPPER |
| 12-21-B | SP-359798B | COVER UPPER-B |
| 12-22 | SE-359924 | ESCUTCHEON VR |
| 12-23 | ML-359930 | LEVER REC VR |

**SYMBOL FOR COLOR VARIATION**

NON: STANDARD COLOR

-B: BLACK

NOTE : PANEL FRON BLOCK includes 12-2 to 12-14.

# INDEX


| PART- NO. | REF. NO. | PART- NO. | REF. NO. | PART- NO. | REF. NO. | PART- NO. | REF. NO. | PART- NO. | REF. NO. |
|---|---|---|---|---|---|---|---|---|---|
| BA-T2089A030A | 3-1 | EI-330352 | 5-IC6 | ET-308141 | 5-TR24 | EV-337993 | 5-VR3 | SZ-359790 | 12-5 |
| BA-T2089A030B | 3-1A | EI-337008 | 5-IC1 | ET-308141 | 5-TR17 | EV-337995 | 4-VR4 | SZ-359923 | 12-4 |
| BA-T2089A030C | 3-1B | EI-337008 | 5-IC2 | ET-308472 | 4-TR9 | EV-337995 | 5-VR6 | TC-706398 | 1-72 |
| BA-T2089A040A | 3-2 | EI-337228 | 4-IC3 | ET-308472 | 4-TR36 | EV-337995 | 5-VR4 | TC-706398 | 2-72 |
| BB-359972 | 1-1 | EI-349372 | 5-X1 | ET-308472 | 4-TR43 | EV-344109 | 4-VR5 | TC-717870 | 1-77 |
| BB-359973 | 2-1 | EI-349874 | 5-IC4 | ET-308472 | 4-TR35 | EV-356582 | 4-VR1 | TC-717870 | 2-50 |
| BD-B359802C | 12-18 | EI-355388 | 6-IC101 | ET-308472 | 4-TR38 | EV-356582 | 4-VR2 | ZG-313186 | 12-7 |
| BD-B359802D | 12-18-B | EI-357498 | 4-IC4 | ET-308472 | 4-TR37 | EV-356679 | 5-VR1 | ZG-717831 | 1-6 |
| BD-B359803C | 12-19 | EI-359985 | 4-IC2 | ET-308472 | 5-TR2 | EV-356679 | 5-VR2 | ZG-717831 | 2-6 |
| BD-B359803D | 12-19-B | EI-359990 | 5-IC3 | ET-308472 | 5-TR23 | EV-359986 | 6-VR101 | ZG-717832 | 1-7 |
| BD-B359803E | 12-19A | EI-361561 | 4-IC1 | ET-308472 | 5-TR36 | EW-347604 | 11-6 | ZG-717832 | 2-7 |
| BD-B359803F | 12-19A-B | EJ-336905 | 4-J1 | ET-308472 | 5-TR12 | EW-347680 | 11-6D | ZG-717833 | 1-9 |
| BD-T2089A020A | 12-1 | EJ-344368 | 5-J2 | ET-308472 | 5-TR25 | EW-347681 | 11-6E | ZG-717833 | 2-9 |
| BD-T2089A020B | 12-1-B | EJ-344368 | 5-J1 | ET-308472 | 5-TR7 | EW-347682 | 11-6C | ZG-717836 | 1-13 |
| BF-717852 | 1-45 | EO-356809 | 4-FL3 | ET-308977 | 4-TR33 | EW-347683 | 11-6A | ZG-717836 | 2-13 |
| BF-717852 | 2-45 | EO-359575 | 4-T1 | ET-308977 | 4-TR32 | EW-348215 | 11-6B | ZG-717839 | 1-15 |
| BM-717859 | 1-M101 | EO-360140 | 4-FL4 | ET-338324 | 5-TR34 | EZ-200473 | 11-3 | ZG-717839 | 2-15 |
| BM-717859 | 2-M201 | EO-361913 | 4-FL5 | ET-338324 | 5-TR21 | HR-717826 | 1-2 | ZG-717847 | 1-35 |
| BM-717860 | 1-M102 | EP-717856 | 1-SL101 | ET-347143 | 4-TR2 | HR-717872 | 2-2 | ZG-717847 | 2-35 |
| BM-717860 | 2-M202 | EP-717856 | 2-SL201 | ET-347143 | 4-TR1 | MB-314722 | 11-12 | ZG-717848 | 1-36 |
| BR-359968 | 11-T901 | ER-306805 | 5-R40 | ET-349366 | 4-TR6 | MB-717858 | 1-56 | ZG-717848 | 2-36 |
| BR-717842 | 1-19 | ER-306805 | 5-R72 | ET-349366 | 4-TR8 | MB-717858 | 2-56 | ZG-717863 | 1-61 |
| BR-717842 | 2-19 | ER-321228 | 5-R65 | ET-349366 | 4-TR11 | MC-364134 | 11-10 | ZG-717863 | 2-61 |
| BR-717843 | 1-20 | ER-321228 | 5-R33 | ET-349366 | 4-TR16 | MI-717845 | 1-33 | ZG-717864 | 1-62 |
| BR-717843 | 2-20 | ER-338224 | 4-R37 | ET-349366 | 4-TR39 | MI-717845 | 2-33 | ZG-717864 | 2-62 |
| BT-359967 | 11-T901A | ER-338228 | 4-R30 | ET-349366 | 4-TR7 | ML-359930 | 12-23 | ZG-717868 | 1-69 |
| BT-359969 | 11-T901B | ER-356247 | 4-R38 | ET-349366 | 5-TR22 | ML-717854 | 1-49 | ZG-717868 | 2-69 |
| BT-359970 | 11-T901C | ER-359738 | 4-R96 | ET-349366 | 5-TR10 | ML-717855 | 1-50 | ZG-717869 | 1-70 |
| BT-359971 | 11-T901D | ER-359738 | 4-R97 | ET-349366 | 5-TR15 | ML-717857 | 1-55 | ZG-717869 | 2-70 |
| EC-306017 | 4-C3 | ER-361284 | 5-R116 | ET-349366 | 5-TR33 | ML-717857 | 2-55 | ZG-717875 | 1-26 |
| EC-307494 | 4-C4 | ER-361284 | 5-R118 | ET-349366 | 5-TR35 | ML-717861 | 1-60 | ZG-717875 | 2-26 |
| EC-314992 | 4-C2 | ER-361284 | 5-R115 | ET-349366 | 5-TR20 | ML-717861 | 2-60 | ZS-314702 | 11-4 |
| EC-320548 | 4-C71 | ER-361284 | 5-R117 | ET-349366 | 5-TR28 | ML-717865 | 1-64 | ZS-323993 | 11-15 |
| EC-326138 | 4-C55 | ER-363986 | 5-R73 | ET-349366 | 5-TR5 | ML-717865 | 2-64 | ZS-336614 | 11-11 |
| EC-338411 | 4-C71A | ER-363986 | 5-R41 | ET-349592 | 4-TR10 | ML-717866 | 1-65 | ZS-350934 | 11-9 |
| EC-347247 | 4-C54 | ES-349367 | 7-TS206 | ET-349608 | 4-TR4 | ML-717866 | 2-65 | ZS-351186 | 11-2 |
| EC-352478 | 4-C62 | ES-349367 | 7-TS207 | ET-349608 | 4-TR44 | ML-717871 | 2-49 | ZS-352133 | 11-8 |
| EC-361261 | 4-C7 | ES-349367 | 7-TS205 | ET-349608 | 4-TR17 | MP-717835 | 1-12 | ZS-354403 | 11-14 |
| EC-362296 | 4-C65 | ES-349367 | 7-TS203 | ET-349705 | 4-TR13 | MP-717835 | 2-12 | ZS-717825 | 1-78 |
| ED-301911 | 4-D10 | ES-349367 | 7-TS202 | ET-349705 | 4-TR15 | MP-717837 | 1-14 | ZS-717825 | 2-78 |
| ED-301911 | 4-D8 | ES-349367 | 7-TS204 | ET-349705 | 4-TR22 | MP-717837 | 2-14 | ZS-717834 | 1-10 |
| ED-301911 | 4-D9 | ES-349367 | 7-TS201 | ET-349705 | 4-TR5 | MS-717829 | 1-4 | ZS-717834 | 2-10 |
| ED-301911 | 5-D15 | ES-349367 | 8-TS304 | ET-349705 | 4-TR18 | MS-717829 | 2-4 | ZW-273914 | 11-5x |
| ED-305655 | 5-D3 | ES-349367 | 8-TS305 | ET-349705 | 4-TR20 | MZ-359935 | 11-7 | ZW-704947 | 1-22 |
| ED-305655 | 5-D5 | ES-349367 | 8-TS301 | ET-349705 | 4-TR29 | MZ-717853 | 1-46 | ZW-704947 | 2-22 |
| ED-306316 | 5-D4 | ES-349367 | 8-TS303 | ET-349705 | 4-TR31 | MZ-717853 | 2-46 | ZW-717828 | 1-3 |
| ED-306316 | 5-D6 | ES-349367 | 8-TS302 | ET-349705 | 4-TR12 | SA-202118 | 11-1 | ZW-717828 | 2-3 |
| ED-306320 | 4-D3 | ES-353296 | 9-SW401 | ET-349705 | 4-TR30 | SB-704944 | 1-38 | ZW-717841 | 1-18 |
| ED-319167 | 4-D6 | ES-353708 | 9-SW403 | ET-349705 | 4-TR14 | SB-704944 | 2-38 | ZW-717841 | 2-18 |
| ED-319167 | 4-D12 | ES-353708 | 9-SW402 | ET-349705 | 4-TR28 | SB-717867 | 1-66 | | |
| ED-330319 | 4-D2 | ES-353708 | 9-SW404 | ET-349705 | 4-TR24 | SB-717867 | 2-66 | | |
| ED-330319 | 4-D4 | ES-358581 | 4-SW1 | ET-349705 | 4-TR27 | SC-359931A | 12-17 | | |
| ED-330989 | 4-D11 | ES-359606 | 11-VS901 | ET-349705 | 4-TR23 | SC-359931B | 12-17-B | | |
| ED-337776 | 4-D1 | ES-359988 | 6-TS101 | ET-349705 | 4-TR19 | SE-359924 | 12-22 | | |
| ED-344280 | 5-D14 | ES-359988 | 6-TS102 | ET-349705 | 4-TR21 | SK-B359925A | 12-10 | | |
| ED-344280 | 5-D9 | ES-717844 | 1-SW102 | ET-350795 | 5-TR45 | SK-B364455 | 12-14 | | |
| ED-344280 | 5-D13 | ES-717844 | 2-SW202 | ET-350795 | 5-TR47 | SK-345270 | 12-16 | | |
| ED-344280 | 5-D11 | ES-717846 | 1-SW103 | ET-350795 | 5-TR37 | SK-359797A | 12-8 | | |
| ED-344280 | 5-D12 | ES-717846 | 1-SW104 | ET-350795 | 5-TR41 | SK-359925B | 12-11 | | |
| ED-344280 | 5-D7 | ES-717849 | 1-SW105 | ET-350795 | 5-TR43 | SK-359925C | 12-11-B | | |
| ED-344280 | 5-D8 | ES-717849 | 1-SW101 | ET-350795 | 5-TR42 | SK-359925D | 12-12 | | |
| ED-344280 | 5-D10 | ES-717849 | 2-SW203 | ET-350795 | 5-TR38 | SK-359925E | 12-12-B | | |
| ED-346603 | 4-D7 | ES-717849 | 2-SW201 | ET-352334 | 5-TR46 | SK-359928A | 12-9 | | |
| ED-347777 | 7-D203 | ET-201580 | 10-TR501 | ET-352334 | 5-TR44 | SK-359928B | 12-9-B | | |
| ED-349662 | 4-D5 | ET-308141 | 5-TR3 | ET-355626 | 4-TR3 | SK-359929A | 12-15 | | |
| ED-349662 | 5-D1 | ET-308141 | 5-TR4 | ET-357845 | 4-TR40 | SK-359929B | 12-15-B | | |
| ED-349662 | 5-D2 | ET-308141 | 5-TR6 | ET-357845 | 5-TR18 | SK-362289A | 12-13 | | |
| ED-359974 | 6-D901 | ET-308141 | 5-TR8 | ET-357845 | 5-TR32 | SM-361028 | 12-20 | | |
| ED-359975 | 6-D904 | ET-308141 | 5-TR13 | ET-357845 | 5-TR27 | SM-361028B | 12-20-B | | |
| ED-359975 | 6-D905 | ET-308141 | 5-TR16 | ET-357845 | 5-TR14 | SP-359798A | 12-21 | | |
| ED-359992 | 7-D202 | ET-308141 | 5-TR26 | ET-357845 | 5-TR31 | SP-359798B | 12-21-B | | |
| ED-359992 | 7-D201 | ET-308141 | 5-TR29 | ET-357845 | 5-TR19 | SP-359800F | 11-13A | | |
| ED-359992 | 8-D301 | ET-308141 | 5-TR30 | ET-362113 | 4-TR26 | SP-359800G | 11-13B | | |
| ED-359992 | 8-D302 | ET-308141 | 5-TR39 | ET-717830 | 1-5 | SP-359800H | 11-13C | | |
| ED-363586 | 6-D903 | ET-308141 | 5-TR48 | ET-717850 | 1-43 | SP-359800J | 11-13D | | |
| ED-363586 | 6-D902 | ET-308141 | 5-TR9 | ET-717850 | 2-43 | SP-359800K | 11-13 | | |
| EH-336776 | 4-FL6 | ET-308141 | 5-TR1 | ET-717874 | 2-5 | SP-359927A | 12-6 | | |
| EH-354528 | 4-FL1 | ET-308141 | 5-TR49 | EV-336785 | 4-VR6 | SP-359927B | 12-6-B | | |
| EH-359984 | 4-FL2 | ET-308141 | 5-TR40 | EV-337993 | 4-VR3 | SZ-357722 | 12-2 | | |
| EI-330352 | 5-IC5 | ET-308141 | 5-TR11 | EV-337993 | 5-VR5 | SZ-359780 | 12-3 | | |

# ABBREVIATIONS FOR SERVICE MANUAL (CASSETTE)

| Abbreviation | Explanation | Abbreviation | Explanation |
|---|---|---|---|
| AC | Alternating Current | MIN | MINute |
| A/D | Analog/Digital | MML | Maximum Modulation Level |
| AF | Auto Fader | MOL | Maximum Output Level |
| AMP | AMPlifier | MPX | Multi PleX |
| AR | Anti Recording | NC | Not Connected (No Connection) |
| AT BIAS | Auto Tuning BIAS | NFB | Negative Feed Back |
| ATT | ATTenuator | NORM | NORMal |
| BAL | BALance | NR | Noise Reduction |
| BEF | Band Elimination Filter | OSC | OSCillator (OSCillation) |
| BSS | Blank Search System | P | Pulse |
| CAP M | CAPsTan Motor | PB | Play Back |
| CH | CHannel | QMSS | Quick Memory Search System |
| COMP | COMParator | QR | Quick Reverse |
| CONT | CONTinuance | R CH | Right CHannel |
| CRLP | Computer Recording Level Processing | REC | RECord (RECording) |
| CS | Chip Select | REV | REVerse |
| D/A | Digital/Analog | ROT | ROTation |
| DC | Direct Current | REW | REWind |
| DET | DETector | SEC | SECond |
| DISCRI | DISCRIminator | SELE | SELEctor |
| DUB | DUBbing | SENS | SENSitivity |
| EQ | EQualizer | SEPP | Single Ended Push Pull |
| FF (or F. FWD) | Fast Forward | SIG | SIGnal |
| FLD | FLuorescent Display | SPECT | SPECTrum |
| FREQ | FREQuency | STD | STanDard |
| FWD | ForWarD | SW | SWitch |
| GND | GrouND | SYSCON | SYStem CONtrol |
| H | High | TP | Test Point |
| HPF | High Pass Filter | TRIG | TRIGa |
| IND | INDicator | VCA | Voltage Control Attenuator |
| IPLS | Instant Program Location System | VOL | VOLume |
| L | Low | VOLT | VOLTage |
| L CH | Left CHannel | VR | Variable Resistor |
| LED | Light Emitining Diode | X'TAL | cysTAL |
| MEMO | MEMOry | X1 | Normal speed |
| MICOM | MIcroCOMputer | X2 | Dubble speed |

# AKAI

## MODEL HX-M515W

## SCHEMATIC DIAGRAM AND PC BOARDS

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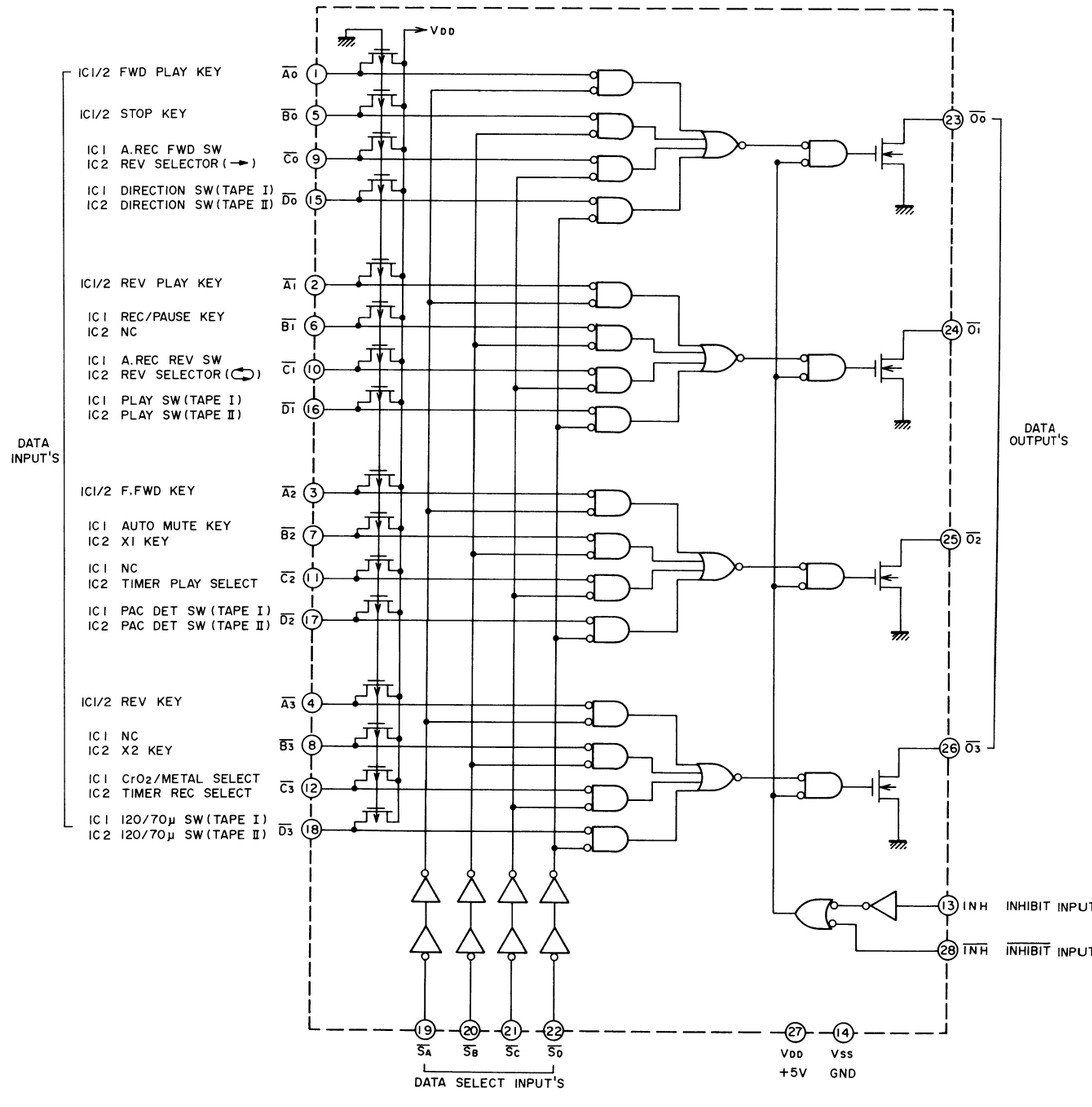
LC7800



# HX-M515W
# PRE AMP/POWER
# BLOCK DIAGRAM

NO.2-1 860314A(A2)

メーター基板
METER PCB T2089A501B

プリアンプ基板
PRE AMP PCB
T2089A501A U,J
502A C,A
503A E,B,S

トランジスター基板
TR PCB
T2089A501F

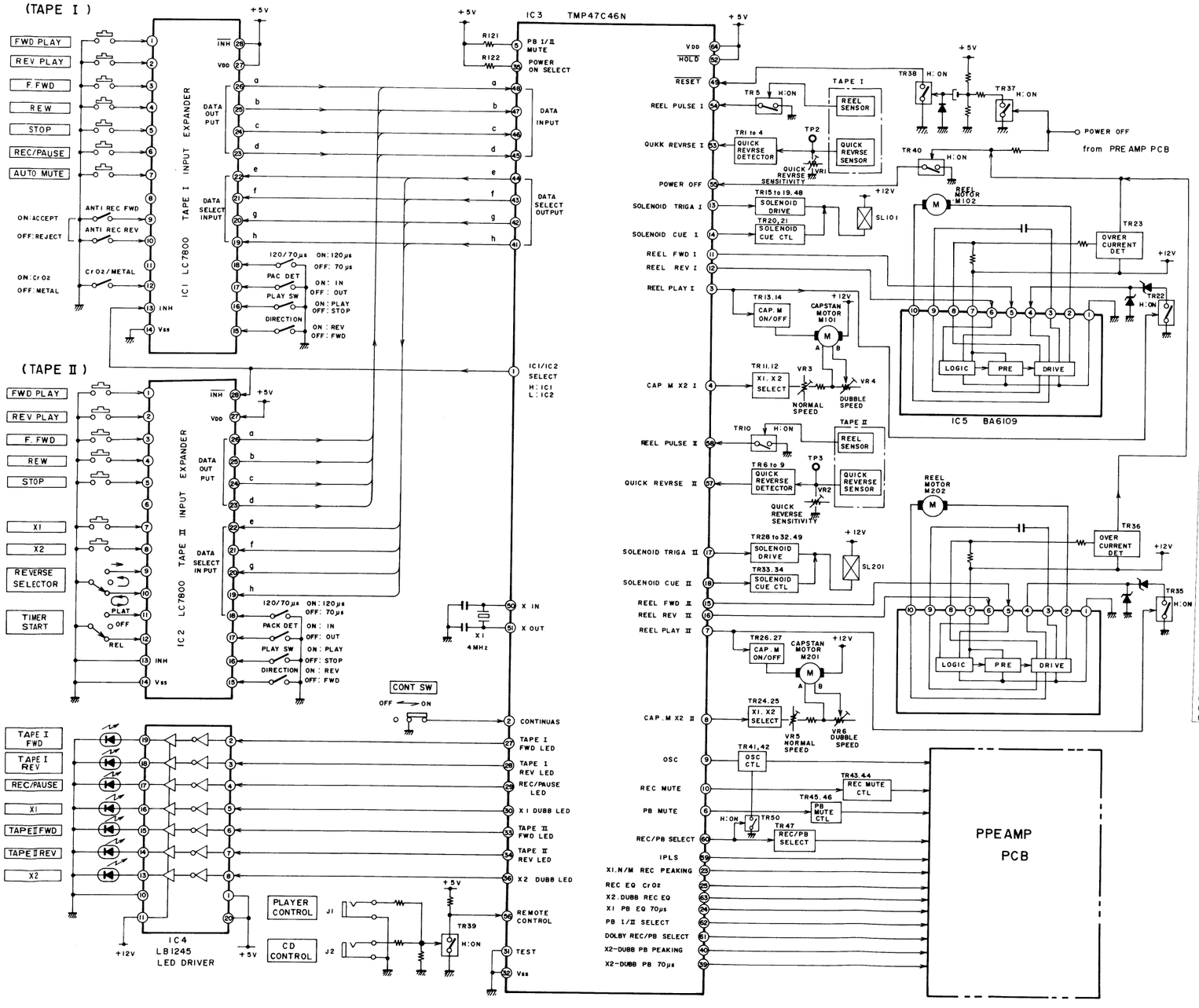
オペレーションテープII基板
OPERATION TAPE II PCB
T2089A501D U,J
502D C,A
503D E,B,S

オペレーションテープI基板
OPERATION TAPE I PCB
T2089A501C U,J
T2089A502C C,A
T2089A503C E,B,S

スイッチ基板
SWITCH PCB
T2089A501E U,J
502E C,A
503E E,B,S

シスコン基板
SYSCON PCB
T2089A504A

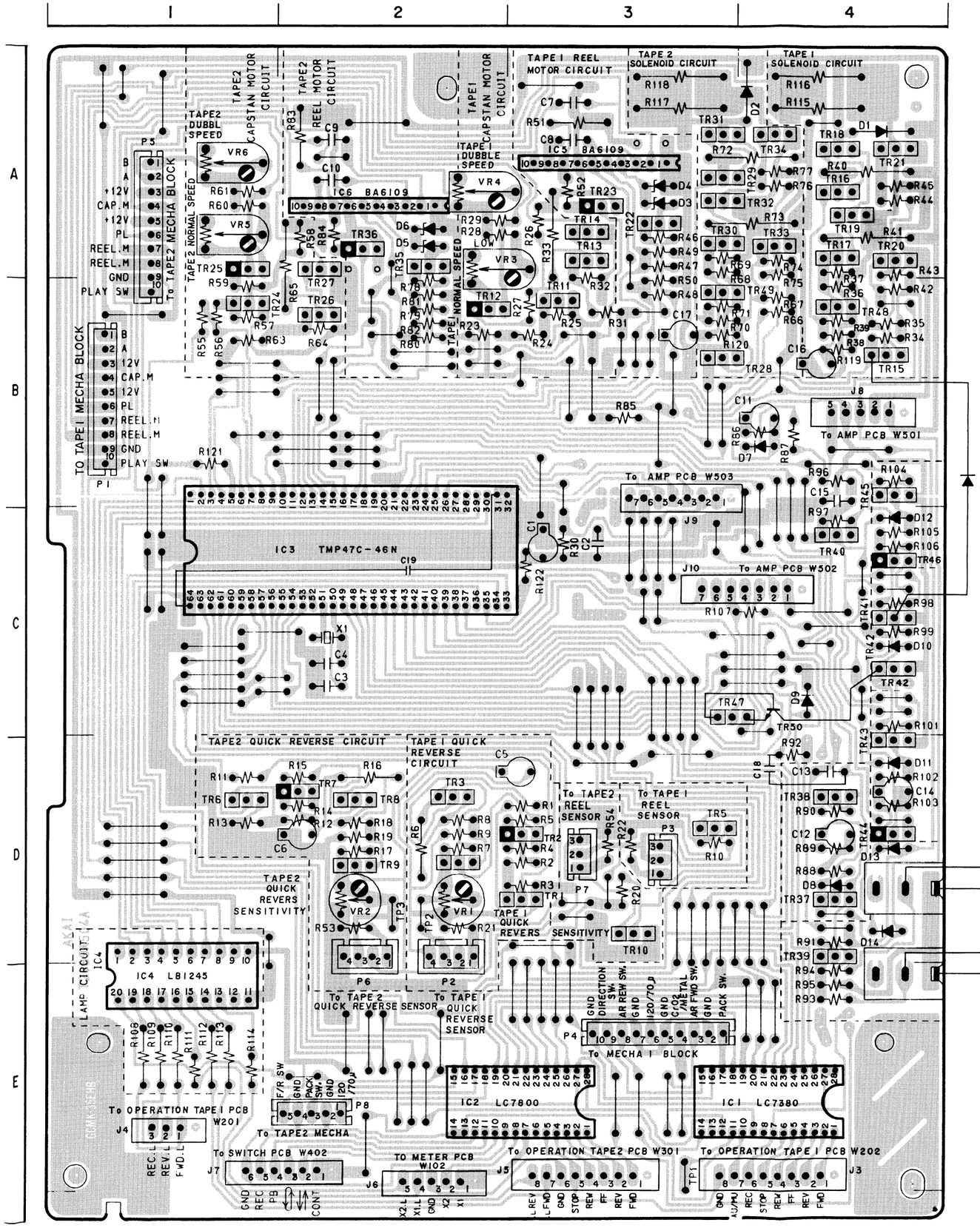
# HX-M515W
# CONNECTION DIAGRAM
NO.3-1 860308A(A2)




IC3 TMP47C46N

| Pin No. | Symbol | I/O | Active | Port Name | Description |
|---|---|---|---|---|---|
| 1 | RD0 | O | L | CS | Chip Select Select IC1/IC2 H:IC1 L:IC2 |
| 2 | RD1 | I | L | CONT | Continuance select signal input |
| 3 | R40 | O | H | REEL PLAY I | TAPE I Reel motor voltage control on play and Capstan motor ON/OFF control |
| 4 | R41 | O | L | CAP X2 I | TAPE I Capstan motor Dubble speed control H:X1 L:X2 |
| 5 | R42 | O | L | PB I/II MUTE | Connect to +B with R121 |
| 6 | R43 | O | L | PB MUTE | mute control output at Play Back |
| 7 | R50 | O | H | REEL PLAY II | TAPE II Reel motor voltage control on play and Capstan motor ON/OFF control |
| 8 | R51 | O | L | CAP X2 II | TAPE II Capstan motor Dubble speed control H:X1 L:X2 |
| 9 | R52 | O | L | OSC | BIAS Oscillator ON/OFF control |
| 10 | R53 | O | L | REC MUTE | mute control output at Recording |
| 11 | R60 | O | H | REEL FWD I | Reel motor Forward control output H:FWD L:REV |
| 12 | R61 | O | H | REEL REV I | Reel motor Reverse control output H:REV L:FWD (TAPE I) |
| 13 | R62 | O | L | SOLENOID TRIG I | Solenoid triga output |
| 14 | R63 | O | L | SOLENOID CUE I | Solenoid cue output |
| 15 | R70 | O | H | REEL FWD II | Reel motor Forward control output H:FWD L:REV |
| 16 | R71 | O | H | REEL REV II | Reel motor Reverse control output H:REV L:FWD (TAPE II) |
| 17 | R72 | O | L | SOLENOID TRIG II | Solenoid triga output |
| 18 | R73 | O | L | SOLENOID CUE II | Solenoid cue output L:ON |
| 19 | RA0 | I | L | NC | |
| 20 | RA1 | I | L | NC | NC |
| 21 | RA2 | I | L | NC | |
| 22 | RA3 | O | L | NC | |
| 23 | P00 | O | L | X1-REC N/M PEAK | |
| 24 | P01 | O | L | X1-PB EQ 70μs | REC/PB AMP control |
| 25 | P02 | O | L | REC EQ $CrO_2$ | |
| 26 | P03 | O | L | REC EQ METAL | |
| 27 | P10 | O | L | FWD LED I | TAPE I FWD/STANDBY LED control |
| 28 | P11 | O | L | REV LED I | TAPE I REV/STANDBY LED control |
| 29 | P12 | O | L | REC LED I | TAPE I REC LED control |
| 30 | P13 | O | L | X1-DUBB LED | X1 (Normal speed) Dubbing LED control |
| 31 | TEST | - | - | TEST | GND |
| 32 | Vss | - | - | Vss | GND |
| 33 | P20 | O | L | FWD LED II | TAPE II FWD/STANDBY LED control |
| 34 | P21 | O | L | REV LED II | TAPE II REV/STANDBY LED control |
| 35 | P22 | O | L | POWER ON SELECT | "L" signal output at Power ON |
| 36 | P23 | O | L | X2-DUBB LED | X2 (Dubble speed) Dubbing LED control |
| 37 | P30 | O | L | X2-DUB REC $CrO_2$ PEAK | |
| 38 | P31 | O | L | X2-DUB REC EQ METAL | REC/PB AMP control |
| 39 | P32 | O | L | X2-DUB PB 70μs | |
| 40 | P33 | O | L | X2-DUB PB PEAK | |
| 41 | RB0 | O | L | | |
| 42 | RB1 | O | L | | Data Select output for Expander IC1, IC2 |
| 43 | RB2 | O | L | | |
| 44 | RB3 | O | L | | |
| 45 | K00 | I | L | | |
| 46 | K01 | I | L | | |
| 47 | K02 | I | L | | Data input from Expander IC1, IC2 |
| 48 | K03 | I | L | | |
| 49 | RESET | I | L | RESET | Reset signal input L:Reset |
| 50 | XIN | I | | X IN | connect a Xtal oscillator (4MHz) |
| 51 | XOUT | O | | X OUT | |
| 52 | HOLD | I | | HOLD | connect to +B (5V) |
| 53 | R80 | I | H | REEL PULSE I | TAPE I Reel pulse input (sensor of Auto Stop) |
| 54 | R81 | I | H | QUICK REVERSE I | TAPE I Reverse sensor signal input |
| 55 | R82 | I | H | POWER OFF | Power off signal input |
| 56 | R83 | I | H | REMOTE CONTROL | Remote control signal input (CD-M515, AP-M313) |
| 57 | R90 | I | L | REEL PULSE II | TAPE II Reel pulse input (Sensor of Auto Stop) |
| 58 | R91 | I | L | QUICK REVRSE II | TAPE I Reverse sensor signal input |
| 59 | R92 | I | L | IPLS | IPLS signal input from PB AMP |
| 60 | RC0 | O | L | REC/PB SWITCH | REC/PB Select for Amplifier H:PB L:REC |
| 61 | RC1 | O | H | DOLBY REC/PB | REC/PB Select for Dolby AMP |
| 62 | RC2 | O | L | PB I/II SWITCH | PB TAPE I/TAPE II Select signal output |
| 63 | RC3 | O | L | X2-DUB REC EQ | REC-EQ control at Dubble speed X2:L |
| 64 | VDD | I | | VDD | +B 5V |

HX-M515W
SYSCON
BLOCK DIAGRAM
NO.2-2 860307A(A2)




シスコン基板　SYSCON PCB　T2089A504A

B = PNP TRANSISTOR
B = NPN TRANSISTOR

2SC3242A(F,G)

2SB774(Q,R,S,T)

2SA1115(E,F,G)
2SC2603(G)
2SC3399
2SC3402
2SD1012-V(H)

## LOCATION OF COMPONENTS

TR's

TR1---D3
TR2---D3
TR3---D2
TR4---D2
TR5---D3
TR6---D1
TR7---D2
TR8---D2
TR9---D2
TR10---D3
TR11---B3
TR12---B2
TR13---A3
TR14---A3
TR15---B4
TR16---A4
TR17---A4
TR18---A4
TR19---A4
TR20---A4
TR21---A4
TR22---A3
TR23---A3
TR24---B1
TR25---A1
TR26---B1
TR27---A2
TR28---B3
TR29---A3
TR30---A3
TR31---A3
TR32---A3
TR33---A4
TR34---A4
TR35---A2
TR36---A2
TR37---D4
TR38---D4
TR39---D4
TR40---C4
TR41---C4
TR42---C4
TR43---D4
TR44---D4
TR45---B4
TR46---C4
TR47---C3
TR48---B4
TR49---B3

IC's

IC1---E4
IC2---E3
IC3---C2
IC4---E1
IC5---A3
IC6---A2

CONNECTORS

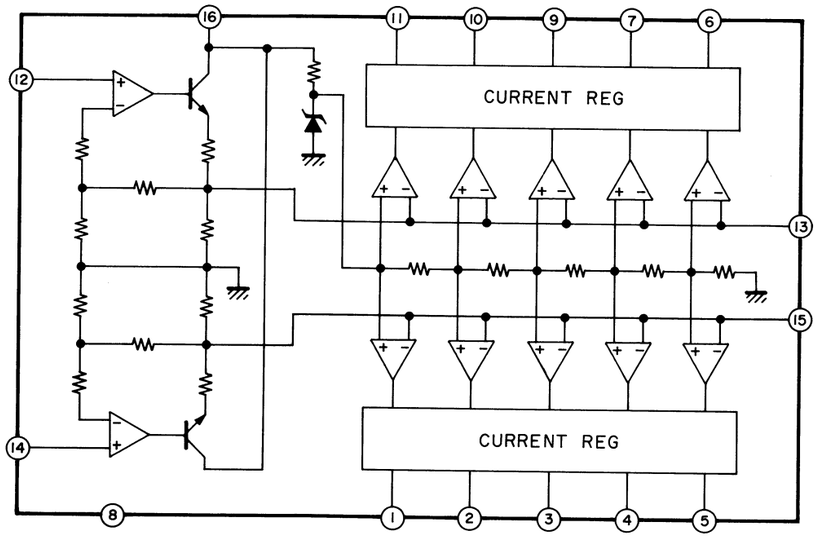
J3----E4
J4----E1
J5----E3
J6----E2
J7----E2
J8----B4
J9----B3
J10----C4

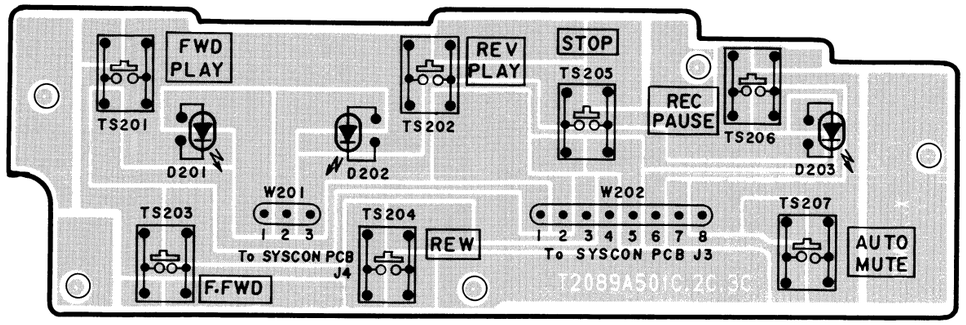
P1----B1
P2----D2
P3----D3
P4----E3
P5----A1
P6----D2
P7----D3
P8----E2

| VR.NO. | LOCATION | ADJUSTMENT'S ITEM |
|---|---|---|
| VR1 | D2 | TAPE I QUICK REVERSE SENSITIVITY<br>テープIクイックリバース感度 |
| VR2 | D2 | TAPE II QUICK REVERSE SENSITIVITY<br>テープIIクイックリバース感度 |
| VR3 | A2 | TAPE I NORMAL SPEED<br>テープI標準テープスピード |
| VR4 | A2 | TAPE I DUBBLE SPEED<br>テープI倍速テープスピード |
| VR5 | A1 | TAPE II NORMAL SPEED<br>テープII標準テープスピード |
| VR6 | A1 | TAPE II DUBBLE SPEED<br>テープII倍速テープスピード |

TR1,3,4,6,8,9,11,13,16,17,24,26,29,30,39,40,48,49---2SC2603(G)
TR2,7,12,23,25,36----------2SA1115(E,F,G)
TR5,10,15,20,22,28,33,35---------2SC3402
TR14,18,19,27,31,32----------2SC3399A(F,G)
TR21,34----------2SD1012-V(H)
TR37,38,41,42,43,45,47----------2SC3399
TR44,46----------2SB774(Q,R,S,T)

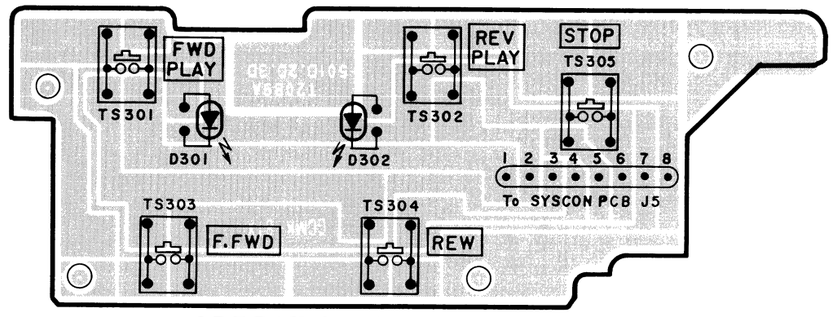
IR2E27A



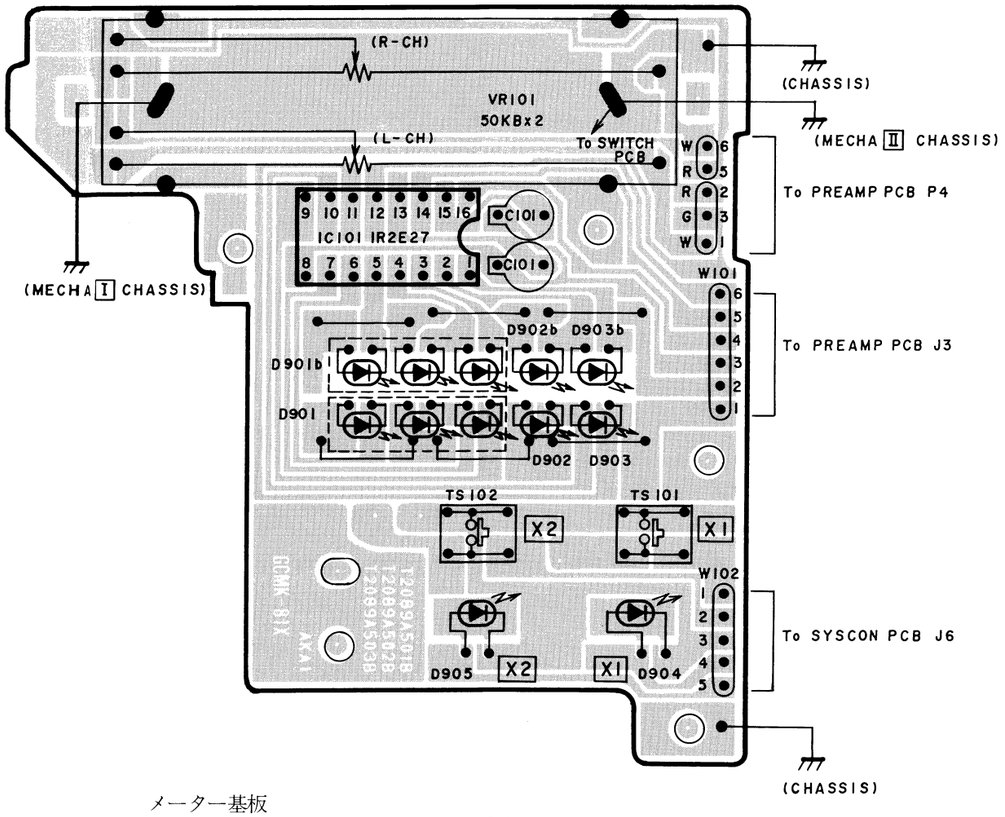

OPERATION TAPE I PCB T2089A501C,2C,3C

オペレーションテープI基板



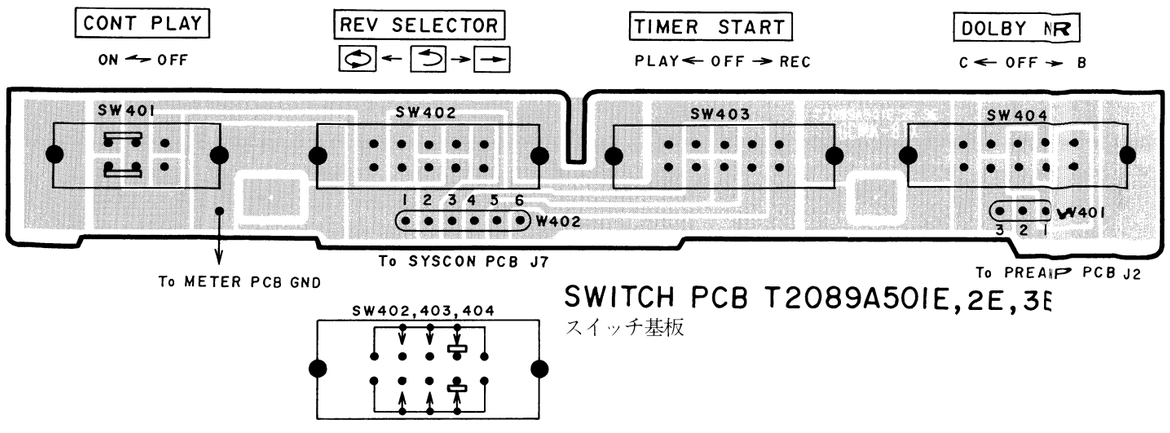

OPERATION TAPE II PCB T2089A501D,2D,3D

オペレーションテープII基板




メーター基板

METER PCB T2089A501B,2B,3B




SWITCH PCB T2089A501E,2E,3E

スイッチ基板

05

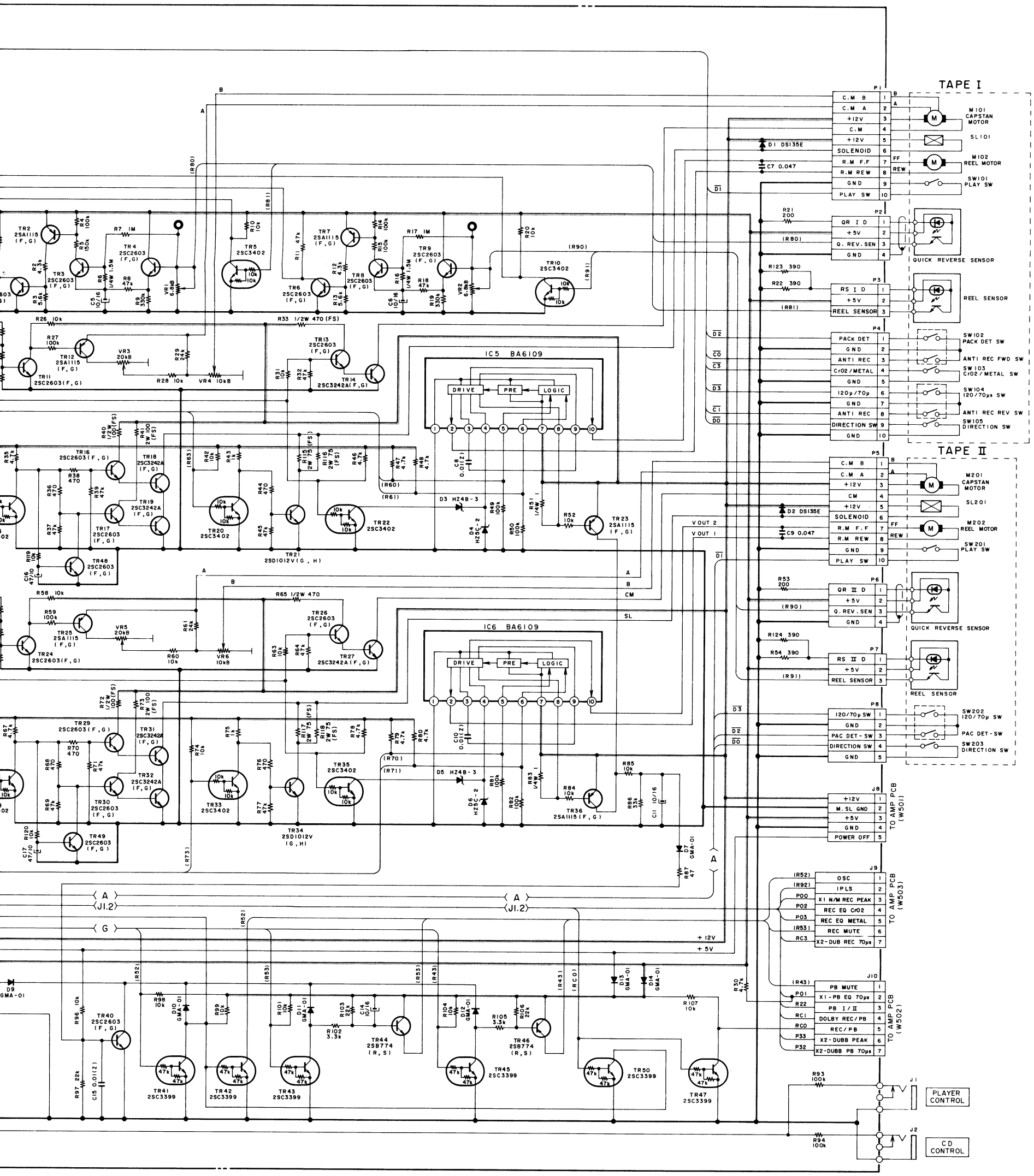
シスコン基板 SYSCON PCB T2089A504A

B電源 B(POWER SUPPLY) LINE

2SC3242A(F,G)

2SB774(Q,R,S,T)

2SA1115(E,F,G)
2SC2603(G)
2SC3399
2SC3402
2SD1012-V(H)




NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W(J)
ALL CAPACITORS IN μF 50WV(J)

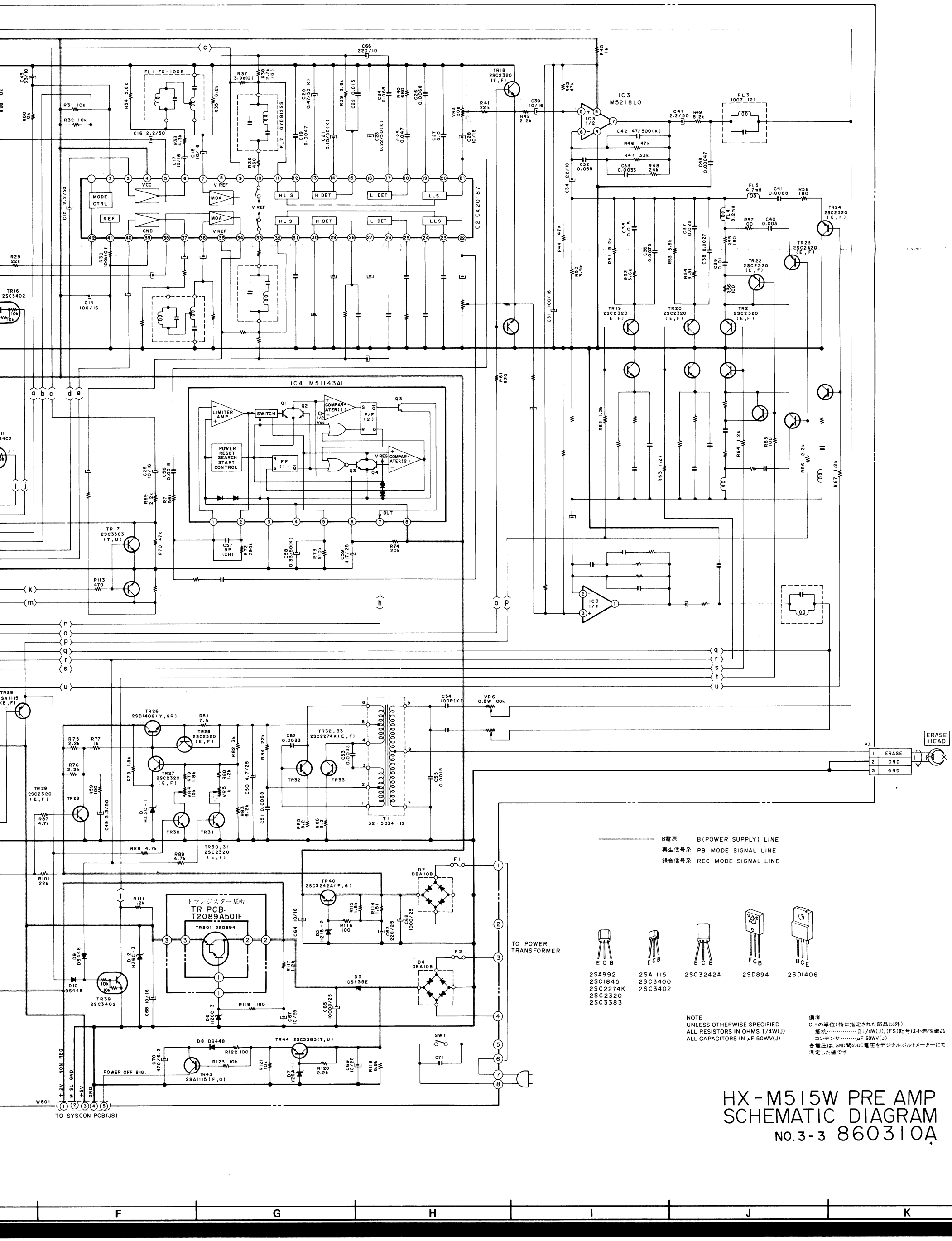
備考
C, Rの単位(特に指定された部品以外)
抵抗……Ω 1/6W(J), (FS)記号は不燃性部品
コンデンサ……μF 50WV(J)
各電圧は、GND間のDC電圧をデジタルボルトメーターにて測定した値です

# HX-M515W
# SYSCON
# SCHEMATIC DIAGRAM
NO.3-2 860309A A1 3

04




プリアンプ基板 PRE AMP PCB T2089A501A




：B電源　B(POWER SUPPLY) LINE
：再生信号系　PB MODE SIGNAL LINE
：録音信号系　REC MODE SIGNAL LINE




2SA992
2SC1845
2SC2274K
2SC2320
2SC3383

2SA1115
2SC3400
2SC3402

2SC3242A

2SD894

2SD1406

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W(J)
ALL CAPACITORS IN μF 50WV(J)

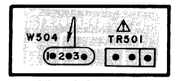
備考
C.Rの単位(特に指定された部品以外)
抵抗……Ω 1/4W(J), (FS)記号は不燃性部品
コンデンサ……μF 50WV(J)
各電圧は、GND間のDC電圧をデジタルボルトメーターにて測定した値です

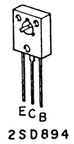
# HX-M515W PRE AMP SCHEMATIC DIAGRAM

NO.3-3 860310A

| VR.NO. | LOCATION | ADJUSTMENT'S ITEM |
|---|---|---|
| VR1 | H2 | TAPE I L-CH PB LEVEL<br>テープIL-CH再生レベル |
| VR1b | H2 | TAPE I R-CH PB LEVEL<br>テープIR-CH再生レベル |
| VR2 | H2 | TAPE II L-CH PB LEVEL<br>テープIIL-CH再生レベル |
| VR2b | H2 | TAPE II R-CH PB LEVEL<br>テープIIR-CH再生レベル |
| VR3 | F5 | L-CH REC LEVEL<br>L-CH 録音レベル |
| VR3b | F5 | R-CH REC LEVEL<br>R-CH 録音レベル |
| VR4 | D3 | CrO2 BIAS<br>$CrO_2$バイアス |
| VR5 | E3 | METAL BIAS<br>メタルバイアス |
| VR6 | E2 | L-CH BIAS<br>L-CH バイアス |
| VR6b | E2 | R-CH BIAS<br>R-CH バイアス |

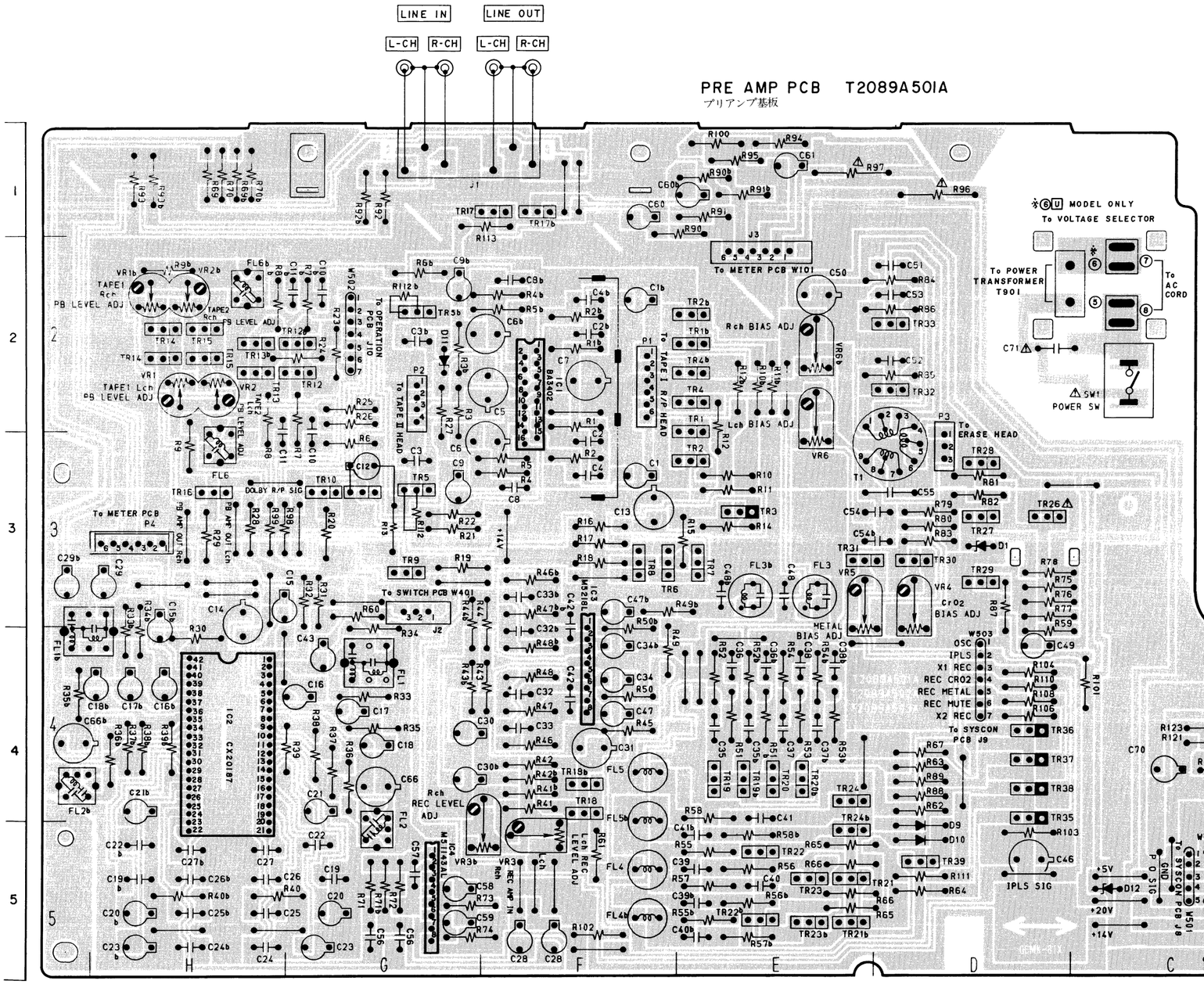
トランジスター基板
TR PCB
T2089A501F




B
=PNP TRANSISTOR
B
=NPN TRANSISTOR

PRE AMP PCB T2089A501A
プリアンプ基板




LOCATION OF COMPONENTS

IC's
IC1---F2
IC2--H4
IC3--F4
IC4--G5

TR's
TR1---E2
TR1b--E2
TR2 --E3
TR2b--E2
TR3 --E3
TR4 --E2
TR4b--E2
TR5 ---G3
TR5b--G2
TR6 --F3
TR7 --E3
TR8---F3
TR9---G3
TR10---G3
TR11---G3
TR12 --G2
TR12b--G2
TR13 --H2
TR13b--H2
TR14 --H2
TR14b--H2
TR15 --H2
TR15b--H2
TR16---H3
TR17---F1
TR17b--F1
TR18---F4
TR18b--F4
TR19 --E4
TR19b--E4
TR20---E4
TR20b--E4
TR21---E5
TR21b--E5
TR22 --E5
TR22b--E5
TR23 --E5
TR23b--E5
TR24 --E4
TR24b--E5
TR26 --D3
TR27 --D3
TR28 --D3
TR29 --D3
TR30 --D3
TR31 --E3
TR32 --D2
TR33 --D2
TR35 --D4
TR36 --D4
TR37 --D4
TR38 --D4
TR39--D5
TR40--A5
TR43--C4
TR44--C4

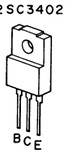
CONNECTOR'S
P1----F2
P2 ----G2
P3----D3
P4----H3
J2 ----G3
J3----E2
W501 --C5
W502 --G2
W503 --D4
W504 --C5

TR1,2---------2SC1845(E,F)
TR3 ----------2SA992(E,F)
TR4,17,44------2SC3383(T,U)
TR5,12 to 15
18 to 24
27 to 31------2SC2320(E,F,G)
TR6 to 8,11,16,39---2SC3402
TR9,35 to 38,43---2SA1115(E,F,G)
TR10 ----------2SC3400
TR26----------2SD1406(Y,GR)
TR32,33 -------2SC2274K(F)
TR40 ----------2SC3242A(F,G)

2SA992
2SC1845
2SC2274K
2SC2320
2SC3383

2SA1115
2SC3400
2SC3402

2SC3242A




2SD1406

= PNP TRANSISTOR

= NPN TRANSISTOR

注意：△の付された部品は、安全上重要部品です。交換の際は、指定部品以外は使用しないこと。

WARNING: △INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: △ IL INDIQUE LES COMPOSANTS CRITIQUES DE SURETE. POUR MAINTENIR LE DEGRE DE SECURITE DE L'APPAREIL NE REMPLACER LES COMPOSANTS DONT LE FONCTIONNEMENT EST CRITIQUE POUR LA SECURITE QUE PAR DES PIECES RECOMMANDEES PAR LE FABRICANT.